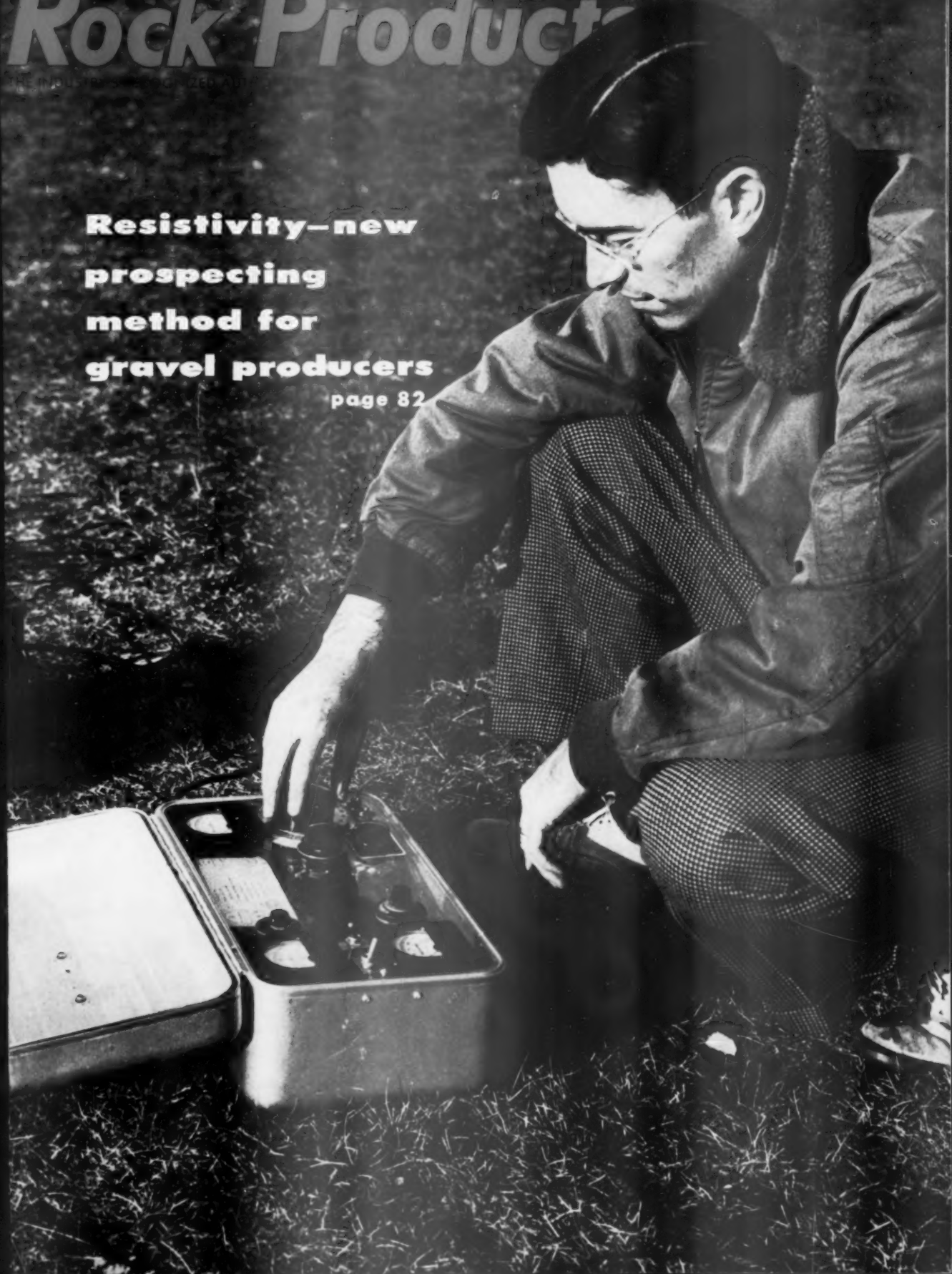


MARCH 1959

Rock Products

**Resistivity—new
prospecting
method for
gravel producers**

page 82



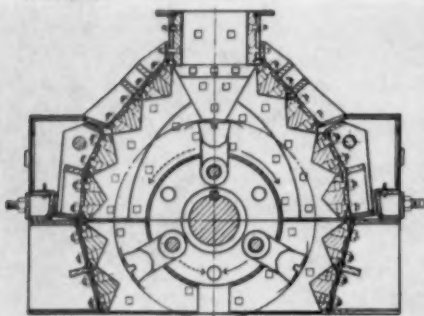
WILLIAMS REVERSIBLE IMPACTOR

Up to 250 tons of aggregate
hourly with only 6 men!



Illustrated is Williams No. 445-X Reversible Impactor powered by 250-HP motor. Preceded by a 30 x 42 jaw crusher and apron feeder, and followed by gradation screens in closed circuit, up to 250 tons of aggregate per hour was obtained to meet these Tennessee Highway Dept. specs.:

100 Percent	1"	Passing
80-95 Percent	¾"	Passing
50-85 Percent	¾"	Passing
36-65 Percent	No. 4	Passing
20-43 Percent	No. 16	Passing
10-21 Percent	No. 100	Passing



Cross section of Impactor. Note wide gap between hammers. High drop chute feeds rock between hammers so it is thrown against impact blocks to set up a ricochet action. Center impact blocks are adjustable with relation to hammers.

The beaming smile on Clarence Duke, co-owner of Burns Stone Company of Burns, Tennessee, indicates his complete satisfaction with the amazing output of his Williams Reversible Impactor. Hitting the Tennessee Highway Department's tightest aggregate specification right down the middle on the "fine" side, the Williams Impactor produced an average of 200 tons-per-hour, frequently reaching 250 tons hourly with only 5 men and Mr. Duke. Performance was so gratifying he ordered another Impactor for the Burns Company plant at Cumberland Furnace, Tenn. Ben Ferguson, at right, is representative for Southern Machinery Company, Williams' distributor for middle Tennessee and north Alabama, which designed and furnished equipment for the Burns' plants.

HIGHER OUTPUT of BETTER PRODUCTS at LOWER COST

- 100% product sizing is assured with a Williams Impactor
- Lower upkeep expense. No close clearances of impact hammers and blocks have to be maintained.
- Reversible rotor doubles life of wearing parts. Eliminates manual turning of hammers.
- Completely open discharge allows unrestricted flow of finished material. Closed circuit operation takes out crushed material as fast as made. No over-crushing or grinding.
- Accessibility—plus! Easiest of all crushers to service. Complete rotor removable without disturbing any feed mechanism.
- Heavy steel plate frame—forged steel oversize rotor shaft—extra heavy alloy steel hammers and impact blocks—many other exclusives insure longer, lower-cost operation.

Ask for brochure

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2706 North 9th Street St. Louis 6, Mo.



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LINK-BELT PRE-BILT SECTIONAL BELT CONVEYORS are pre-engineered . . . avoid need for detailed drawings. From standardized data, Link-Belt engineers prepare "on-the-site" quotations. Interchangeable, standardized parts speed selection, reduce purchasing costs.

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B.F. Goodrich



Men blow up rocks to make room for a dam

B.F. Goodrich improvements in rubber brought extra savings

Problem: Those machines bore deep holes in solid rock with power from compressed air. Dynamite put in the holes will blow the rock to bits. It used to be that the rubber air hose on these machines would go to pieces, too. When heat from the compressor got into the hose, it would harden the rubber, breaking it into loose pieces that clogged the machine, put it out of action.

What was done: B.F. Goodrich engineers went to work on the problem. By

adding, subtracting, changing proportions of rubber, they found a special compound for the hose that stands heat without scorching or hardening.

Savings: Hose lined with this new rubber was made and put to work. On jobs where air hose used to go to pieces in weeks, B.F. Goodrich hose now lasts months, even years.

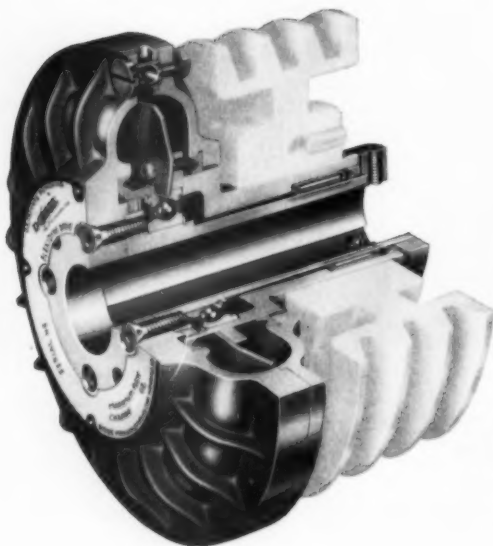
Thousands of feet of B.F. Goodrich air hose are in constant use on the \$98,000,000 Priest Rapids Dam project in Washington (pictured above). It's

doing dozens of different jobs, and lasting longer doing them, even though it's dragged over rough, jagged rocks, soaked in water, sometimes battered by flying pieces of rock.

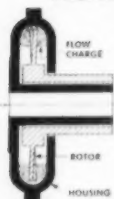
Where to buy: Your B.F. Goodrich distributor has complete information on B.F. Goodrich air hose. And, as a factory-trained specialist in rubber products, he can answer your questions about *all* the rubber products B.F. Goodrich makes for industry. *B.F. Goodrich Industrial Products Company, Department M-532, Akron 18, Ohio.*

B.F. Goodrich *industrial rubber products*

WHAT'S YOUR PROBLEM?...



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When the motor is started, centrifugal force throws the flow charge to the perimeter of the housing, packing it between the housing and the rotor, which transmits power to the load. Initial slippage is momentary. Housing and rotor become locked together and achieve full load speed without slip and at 100% efficiency.

CALL THE TRANSMISSIONEER — your local Dodge Distributor. Factory trained by Dodge, he can give you valuable help on new, cost-saving methods. Look in the *white* pages of your telephone directory for "Dodge Transmissioneer."

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THE DRY FLUID DRIVE

It is no longer necessary to accept the destructiveness—the costliness—of conventional starting in the mechanical transmission of power. Flexidyne changes that!

Flexidyne is the new way to start loads *smoothly*—to protect against shock and overload—to save power—all *without any sacrifice of efficiency at full load!*

This revolutionary development is ushering in "the day of the soft start"—which can mean thousands of dollars to you in equipment savings and in better, more economical operation.

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Your Northwest is a *real* Rock Shovel. It brings you that outstanding quality of always being ready to go. *We hear it everywhere and Northwest users will tell you so!* It's the steady hour after hour on the job that produces yardage.

Northwest design begins from the bottom up for rock work—cast steel machinery bases and machinery side frames, crawlers that give self-cleaning action and more easily negotiate tough going, the Cushion Clutch that eliminates shock overloads to parts under power, the "Feather-Touch" Clutch Control for easier handling. Uniform Pressure Swing Clutches that take the jerks and grabs out of swinging, the Northwest Dual Independent Crowd that utilizes force most other independent crowd shovels waste—these are but a few of the advantages that Northwest Rock Shovels bring you. And remember, if you have a *real* Rock Shovel you never have to worry about output in *any* digging. With the advantages and proved performance of a Northwest it's no wonder Northwest owners come back!

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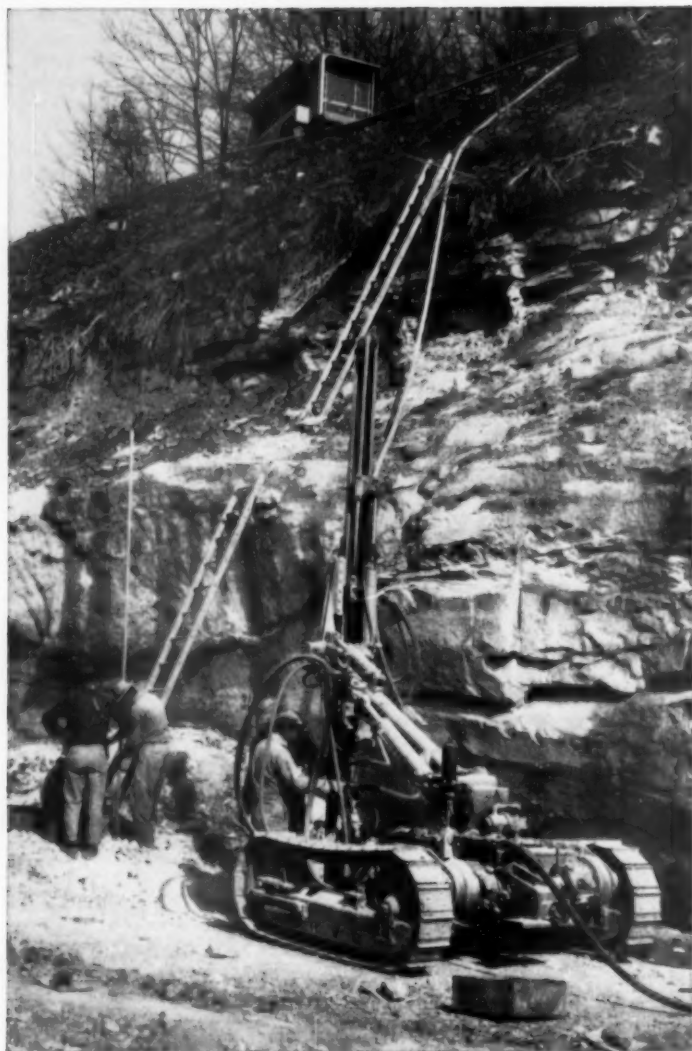
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Capacity

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¾ Yd. to 2½ Yd.
Capacity

TRUCK CRANES
25-Ton to 35-Ton
Capacity



*"It's a
**DRILLIN'
FOOL**"*

says Jim Chase, superintendent
for the Haynes Construction Co.

*"Does as much work
as three wagon drills
—and at half the price!"*

These are the comments of a veteran rock drill man. And when Jim Chase calls the CRAWL-IR a "drillin' fool," you can be sure his enthusiasm is well deserved.

The unit shown above is being used by the Haynes Construction Company of Bluefield, West Virginia, to do the rock work on a new highway for Charleston's Kanawha County Airport. But rough ground and deep cuts like this were no problem to the fully mechanized CRAWL-IR drill. In fact Jim Chase, superintendent of the job, reported that it easily out-performed three wagon drills—and at half the cost.

Supplied with 100 psi air from a 600 cfm I-R Gyro-Flo compressor, the CRAWL-IR moves

from hole to hole under its own power. Five large, double-acting hydraulic cylinders control *all tower motions* at the touch of a throttle. You can set up to drill in any position in a matter of minutes. And the powerful D-45 drill, with reverse rotation, permits adding and removing coupled steels in a hurry.

Time formerly spent in moving the equipment, setting it up and changing steels is now spent *drilling rock*. You get more footage per shift with far less effort than ever before. Ask your I-R man for complete information on the time-saving, cost-saving CRAWL-IR drill and long-life I-R carburized drill steel and Carset bits Or send today for a copy of Bulletin No. 4189.



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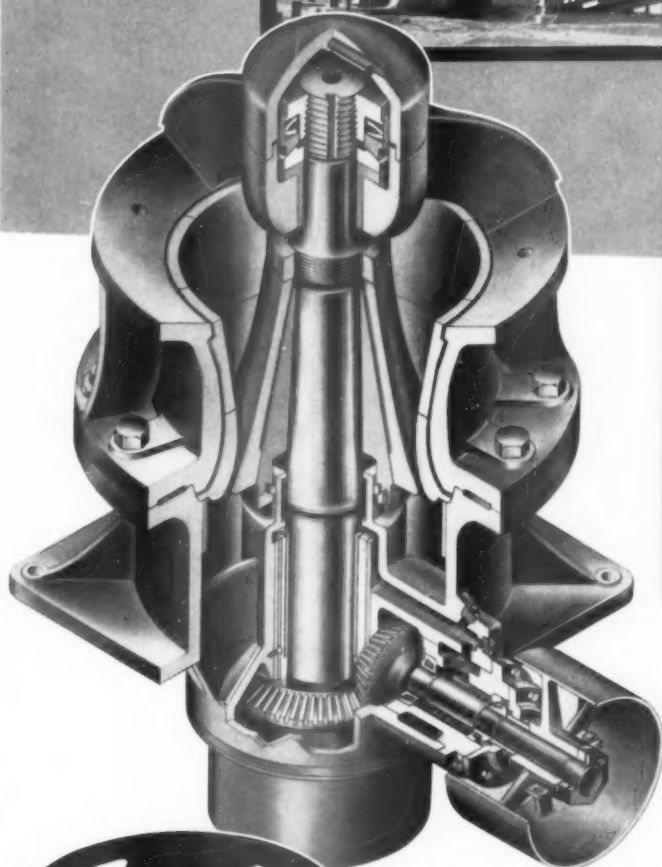
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type **TY** gyratory crusher

for secondary reduction



Shown at left is a 3'-0" Traylor Crusher in a rock and gravel producing plant. Above - 2'-4" TY Crusher in operation at sand and gravel plant.



Traylor TY Secondary Crushers feature many original Traylor developments. Among them are the famous self-tightening bell head, curved concaves of manganese steel, and the patented Traylor dust seal that excludes dust and grit from the lubrication chamber. You buy many outstanding features when you buy Traylor — famous the world over for fine crushing machinery. Write for Bulletin No. 8112 today!

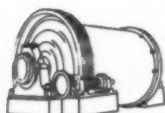


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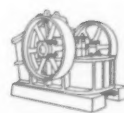
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"Our first 24's stripping record sold us on our

—Luttjohann Stone Co., Topeka, Kansas

"When our first Torque-Converter TD-24 went to work in November, 1957 it stripped 50% more overburden than its steering-clutch competitor," reports John Luttjohann, Luttjohann Stone Co., Topeka, Kansas. "It cut our stripping costs per yard so much, we bought our second one in June, 1958.

"Now the two TD-24's are giving us lower stripping costs than we've had in recent years, in the face of generally higher costs. The Torque-Converter '24's' are superior machines, powerful enough to push big loads in all conditions, even when frequent heavy rain made a swamp of the quarry.

"'24's' are fast, so we can make the long pushes pay off. And '24's' are trouble free. We haven't lost any time with these two machines in almost 2,000 hours of the roughest work in the quarry?"

Luttjohann Co. compared performance!

The Luttjohann's proved by direct comparison that their Planet Power-steered TD-24 could rip and strip 50% more overburden than a 20-ton steering-clutch competitive rig.

Planet Power steering eliminates load-limiting "dead-track drag" keeps full-time "live" power on both tracks. You don't "half-kill" your power and traction to control the TD-24—on turns as you must with any king-sized steering-clutch tractor. You get bonus-load follow through—and don't spill the extra-profit yardage with "jerky" steering.

You can "adjust" TD-24 track speed to assure full-bite performance, benching or highwalling—where steering-clutch rigs can only "nibble"!

Prove the big yardage increase you can get with a Planet Power-steered International TD-24. Measure the capacity increases you also get with this Hi-Lo, full-power planetary shifting. Check the fast production-boosting TD-24 reverse speeds. Ask your International Construction Equipment Distributor for a demonstration!



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Equipment***

International Harvester Co., 180 North Michigan Avenue

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors... Self-Propelled Scrapers and Bottom Dump Wagons... Crawler and Rubber-Tired Loaders... Off-Highway Haulers... Diesel and Carbureted Engines... Motor Trucks... Farm Tractors and Equipment.



*economy
second"*



With the ripper-equipped Torque-Converter TD-24, the Luttjohann quarry rips tough rock layers into movable spoil. They push slabs of rock as heavy as 40 tons, with the blade. Daily crusher output average is about 1,000 cu. yd.

One TD-24 sells another by outproducing a king-sized competitive crawler by an amazing 50%—stripping overburden in side-by-side comparisons at Luttjohann Stone Co., Topeka, Kansas! Here are their Torque-Converter "24's!"



NOW FOR THE FIRST TIME

NEW 385

INTERNATIONAL® UDT



Here's the all-new direct start 385 max. hp International UDT-817—a compact, heavy-duty 4-cycle, 6-cylinder engine thoroughly proven in six years of development and testing—backed by 26 years of experience in manufacturing and selling over 400,000 heavy-duty diesel engines.

Designed for versatile application in a wide variety of rugged pit and quarry applications, the UDT-817 answers the demand for dependable high power and lower cost operation on crushers, generators, dredge or sand and gravel pumps, drills, compressors, and for powering on-or-off-highway earth moving equipment.

A wide variety of accessory equipment including air cleaners, flywheels for leading makes of torque converters and clutches, torque converter cooler, air control compressors, safety shut-offs, instruments and engine controls can be furnished to meet your installation requirements. Base, radiator, hood and dash, clutch and power take-off are available for complete power units.

For more specific information or application assistance, merely call your nearby International Power Unit Distributor or Dealer.

BRIEF SPECIFICATIONS

Type	4-cycle turbocharged
Bore and Stroke	5 $\frac{3}{8}$ x 6"
Number of Cylinders	6
Displacement	817 cu. in.
Max hp	385 @ 2100 rpm
Rated hp	375 @ 2100 rpm
Max. Torque	1,040 lbs. ft. @ 1400 rpm
Compression Ratio	16:1
Weight	3,540 lb.
Lbs. per max. hp	9.2
Length, fan to flywheel	61 $\frac{1}{2}$ "
Height	56 $\frac{1}{2}$ "
Width	39 $\frac{1}{2}$ "
Flywheel housing SAE	No. 1

hp.
817



FEATURES THAT ADD DEPENDABLE, ECONOMICAL POWER TO PIT OR QUARRY EQUIPMENT

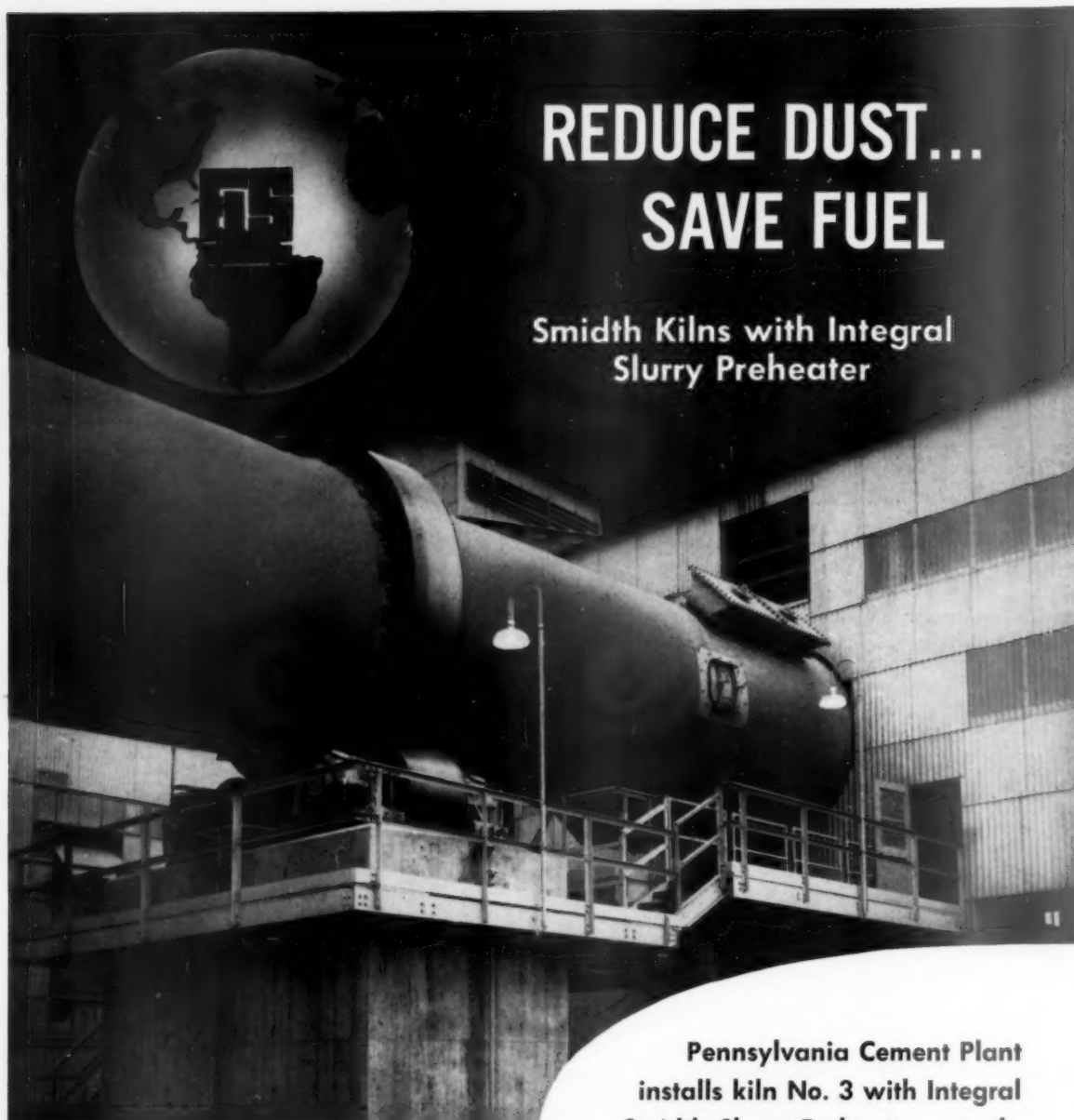
- Fast direct starts with 24-volt electrical system.
- Direct injection of fuel under pressures to 20,000 psi by individual camshaft actuated multi-orifice injectors.
- Exclusive IH twin plunger metering pump directs equal and precise amounts of fuel to each injector in proper firing order according to load and speed demands.
- Turbocharger puts waste energy in exhaust gases to work for higher power output and lower fuel consumption.
- Dual intake and exhaust valves for free breathing efficiency.
- Positive valve rotators keep valve seats free of deposits.
- Aluminum alloy pistons working in replaceable wet cylinder sleeves with velocity swirl flow water cooling on outside, jet oil cooling on inside, for long life operating temperatures.
- Fully counterbalanced Tocco-hardened crankshaft with seven big main bearings and torsional vibration damper for smooth, dependable high power output.



International® Construction Equipment

International Harvester Co., 180 North Michigan Ave., Chicago 1, Ill.

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors... Self-Propelled Scrapers and Bottom-Dump Wagons... Crawler and Rubber-Tired Loaders... Off-Highway Haulers... Diesel and Carbureted Engines... Motor Trucks... Farm Tractors and Equipment.



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installs kiln No. 3 with Integral
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What's Happening

IN OTHER FIELDS OF INTEREST TO THE ROCK PRODUCTS INDUSTRY

March, 1959

Ways of moving natural gas from the Sahara to France are being considered.

Algeria can use only a fraction of the deposits found at Hassi R'Mel and the rest must be transported, reports **Chemical and Engineering News**. Transportation possibilities include: Piping the gas to the Mediterranean coast of Europe and using it to generate electric power; sending it via an undersea pipeline; or using special tankers to carry liquefied gas across the Mediterranean or into the Atlantic and to northern Europe.

More than 4,000 yards of a special aluminized asbestos fabric form the lining of

the huge aluminum geodesic dome enclosing the new Casa Manana opera house in Fort Worth, Texas, reports the magazine **Asbestos**. The material was developed by the textile division of U. S. Rubber Co. as a fire-resistant moisture barrier with a decorative surface. It is installed over 3-in. thick fiber insulation. The dome of the building was designed and developed by Kaiser Aluminum & Chemical Corp. and is based on a system invented by R. Buckminster Fuller.

Canadian mining companies are eyeing Ireland, comments the Financial Post

as it points to an example of friendly and profitable international relations. Opened recently at County Wicklow was a new mine of Irish Copper Mines, made possible by venture capital and mining know-how of Canadian H. W. Knight Jr., with the Irish government guaranteeing the bonds. The 3,000-tpd. mining and concentrating plant will expand to 5,000 tpd. late this year. There is a new townsite with modern hospital, and rehabilitation docks capable of berthing ocean steamers are within seven miles of the mine.

Producers in the rock industries who rig up portable service carts have been

gone one better by an organization that manufactures a gasoline service station on wheels for supermarket shoppers. This is a gasoline tank hauled by a golf cart with a battery-powered, 2½-hp. motor. A water tank and air compressor tank are mounted on front of the unit and a rack next to the driver holds cans of motor oil.

A robot coal miner has been developed by Union Carbide Olefins Co.; Joy Manu-

facturing Co. will build and sell comparable units. The system is expected to be ready for working underground deep mines in 5 to 10 years. The robot miner is run remotely by one man at an electronic control center. It penetrates high-wall coal to a depth of at least 1,000 ft. and sensing elements signal the operator whether it is heading properly into coal. A prototype, built after several years of testing, advanced a mining entry at more than 100 ft. per hour.

Mineral and fuel output value declined in 1958. U. S. mines and wells yielded

\$16.4 billion of minerals in 1958, almost \$1.8 billion below the value of 1957 production, the Interior Department said in a preliminary report.

Two key economic indicators rose further in December—industrial output and private housing starts. But personal income declined slightly from its November rate. Industrial production went up one point to 142 percent of the 1947-49 average, the Federal Reserve Board reported. Housing starts zoomed to a seasonally adjusted rate of 1,430,000 annually—100,000 ahead of the November pace. Personal income in December eased to \$359.3 billion yearly, down \$900 million from the November rate.

A process that solidifies quicksand into a stone-like substance able to support large buildings and tunnels was adopted for scores of engineering projects in 1958 and is expected to have substantial further development this year. The process was first developed by Dr. Hugo J. Joosten, a Dutch mining engineer, in the Netherlands and Germany a generation ago. It chemically solidifies loose sand and soils that are penetrable by water.

The supply of railroad freight cars is expected to keep pace with an anticipated gradual improvement in business this year, according to Joseph J. Kelley, vice chairman of the Car Service Division of the Association of American Railroads. Although the carriers entered 1959 with 76,000 fewer serviceable freight cars than a year earlier, he said, no shortage was anticipated in the first quarter, with the possible exception of hopper cars.

A test of an underground atomic explosion to extract shale oil was offered to the oil industry by the government on a cooperative basis, but chances appeared slim that the oil industry would accept the government's bid. The Atomic Energy Commission and the Bureau of Mines propose to set off an atomic explosion in rock-shale deposits in Colorado to determine the feasibility of using this method to extract shale oil economically. But they want the oil industry to chip in on the costs.

Alaska already ranks high in construction activity. According to Ewan Clague, commissioner of labor statistics, the new state stands with some of the largest and most prosperous states in the nation in this sphere. In an article in a recent issue of *Construction Review*, Mr. Clague stated that "there is little doubt that this favorable position will be retained or improved in the future." According to the article, federal construction is Alaska's chief business and the construction industry—supported mainly by federal funds—has accounted for almost $\frac{1}{3}$ of the area's employment in recent years.

A water repellent for masonry which can be diluted with plain mineral spirits is being marketed by Dow Corning Corp. of Midland, Mich. The product is clear as water and tests show that the water resistance lasts over five years, the firm says.

Construction costs will rise to a new high in 1959 for the 10th consecutive year, *Engineering News-Record* reported. The magazine forecast a four percent rise by December, 1959, based on higher prices for structural steel, portland cement, lumber and wages.

The editors

HOW TO PRODUCE TOP-QUALITY AGGREGATES

TELSMITH

Equipment

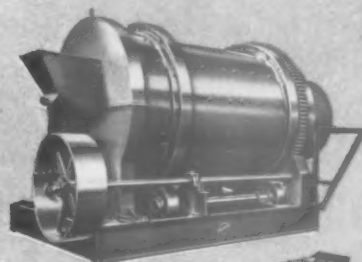
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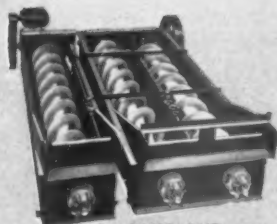
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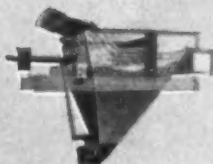
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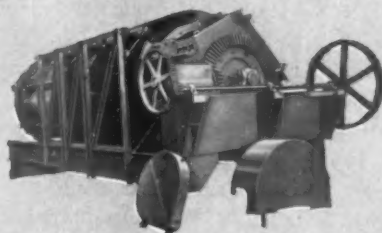
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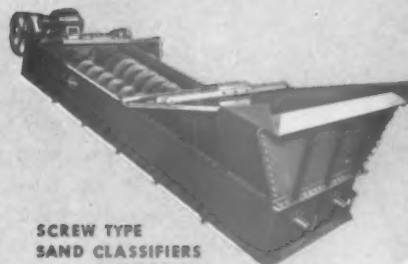
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ROCK PRODUCTS, March, 1959

15



"JOB-TAILORED ESCO DRAGLINE BUCKETS SOLVED OUR DOWNTIME, MAINTENANCE PROBLEMS"

...reports Howard Harrison, mechanical supt., C. A. Pitts General Contractor Ltd., Toronto.

"The material in which we are working," explains Howard Harrison, mechanical superintendent on a St. Lawrence Seaway job involving the removal of 16-million yards of glacial till, "is an extremely hard mixture of clay, gravel and boulders." "Our original buckets broke down frequently in this unexpectedly tough going. Maintenance was costing us more than \$100 per week per bucket. Then we checked with our *ESCO* representative, who sent *ESCO* bucket specialists to look into our problem. They recommended the use of two 6-yard *ESCO* HDH Triple Tapered buckets, custom-engineered to our requirements. The *ESCO* buckets immediately reduced our maintenance costs, and we were able to work the two draglines with only one spare bucket for each instead of two previously required."

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EDITOR'S PAGE

George C. Lindsay, Editor

How's your "roving rock" business?

A GLANCE AT AVAILABLE data leads us to believe that commercial aggregates producers are turning their backs on most of a 5-billion-ton market over the next 13 years.

The stakes are this big for rock products producers in the Federal-Aid Highway Program: 9.7 billion tons of sand, gravel, stone and slag. But at least half of that is coming from contractors, who are your potential customers. Most contractors don't want to get into the production business, but they are. And they're your competitors.

What can you, or will you, do about it?

One good answer is given by Warren D. Fish, federal Bureau of Public Roads, in his article beginning on page 76 of this issue. Mr. Fish lists five ways how you can redouble your efforts to explore profitably what he calls the "roving rock" business. We recommend this article for your reading.

First, you have to want the business. Possibly you don't realize the full potential of the road-aggregate market in your area. Maybe you figure you couldn't supply the market, even if you knew the potential. But you can. Mr. Fish highly recommends that you research the possibilities to get the market facts.

Then, get out and sell your products. It can be done; it has been done, profitably. Remember: contractors are not going to beat a path to your plant and plead with you to let them have your products for a road job.

There's the problem of production facilities to do the job. Mr. Fish says you'll have to be prepared to move your plants with the moving roads. Not all roads will be built through or around cities; many, many road miles will be in rural areas.

So, the important role of the portable plant for this work becomes apparent. Highly mobile crushing and screening plants are available. They can meet tough specifications for products, and are capable of producing with high output at profitable margins. Read what Ray Day says in his article covering a portable-plant operation on page 92.

Also, so-called semi-portable plants are available. They have been used successfully, particularly where washing facilities are called for. Where water problems and less frequent moves are factors, equipment that can be hauled by truck and trailer may be advantageous.

We second Mr. Fish's suggestion that there's a real opportunity for the commercial aggregates producer to take full advantage of an increasing market potential. You can, with your superior production experience and proper equipment, increase your "roving rock" business and your profits.

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Uniform cement from vertical kilns in Australia

SINCE PUBLICATION of our December issue, in which we referred to some adverse criticism of our discussion of the non-uniformity of portland cement as presently manufactured, we have received some highly complimentary comment—and from cement manufacturers! The most interesting one perhaps is from an Australian friend, with whom we have corresponded for many years, but unfortunately have never met. He is Dr. Steven Gottlieb, now managing director of Gippsland Industries, Ltd., Melbourne. Readers of ROCK PRODUCTS will remember him as a valued but too infrequent contributor on cement chemistry.

Dr. Gottlieb thought so much of our "Notes" in the September issue on "How Uniform Must Portland Cement Be?" that he quoted from it in a radio broadcast on November 18 and 24. He used our arguments not exactly as we had in mind, but apparently effectively to point out "that the uniformity of cement quality is one of the most important factors in producing uniform quality concrete by ready mixed concrete manufacturers, and also by builders who mix their own concrete." That is a logical and one intended conclusion; but from it, our Australian friend makes a sales pitch in favor of using a single brand of cement where possible, which, of course, overlooks a significant point brought out in the Walker and Bloem report that they had found cement of the same brand and even from the same mill can vary radically in strength characteristics from day to day.

Some cement characteristics. What makes this particular comment interesting is that the author claims to have a portland cement that far exceeds the Australian standard requirements, and is guaranteed to be of uniform quality. The company makes two brands of cement termed "N"—normal portland cement, and "D"—high early strength portland cement. In a little booklet of instructions issued by the manufacturer on how to obtain high quality concrete is the following tabulation of the qualities claimed for these cements:

AUSTRALIAN STANDARD SPECIFICATION TESTS (A.2 — 1948) for Brands "N" & "D" GIPPSLAND CEMENTS				
Compressive Strength 1 cement, 3 Standard Sand				
Specification Requirements for				
Description of Tests	Portland Cement	High Early Strength Portland Cement	Results of Tests "N" "D" Gippsland Cement	
	psi.	psi.	psi.	psi.
3 days	2,500	4,000	5,000	5,700
7 days	3,500	5,500	6,880	7,260
28 days	4,500	6,500	8,650	9,000
Constancy of Volume, max.	5 m/m	5 m/m	0.5 m/m	0.5 m/m
Setting Time				
Initial Set, min.	1 hr.	1 hr.	4 hr.	4 hr.
Final Set, max.	12 hr.	12 hr.	6 hr.	6 hr.
Chemical Properties				
Ignition loss, max.	3 %	3 %	2 %	2 %
Insol. residue, max.	2 %	2 %	0.9 %	0.9 %
Sulphuric Anhydride, max.	2.75 %	2.75 %	2.5 %	2.5 %
Magnesia, max.	4 %	4 %	1.6 %	1.6 %

It will be noted that the strength properties far exceed the standard specification requirements. However, the points that interest us most are the appreciably longer initial setting time, the shorter final setting time and the low insoluble residue. These factors lead us to believe that this cement has a higher than ordinary silica ratio and that the lime and silica are really combined in a desirable way with a large amount of gel, accounting for final set. Moreover, it is claimed that the six months' strength exceeds the 28-day strength by about 30 percent, and that the one-year strength is about 45 percent greater than the 28-day strength. This constant gain in strength is another characteristic of a portland cement with a more than average silica ratio—in other words, a higher than average proportion of dicalcium silicate. It comes nearer to fulfilling the requirements of the "good old-fashioned American portland cements," once desired by the Kansas State Highway Department, than any we have heard of in this country.

Moreover, the "D" brand, or high early strength cement, is of the same chemical composition, or

Please turn to following page

Rocky's Notes

continued . . .

made of the same clinker, as the "N" or normal cement. It is merely more finely ground, or as the booklet describes it, "of larger specific surface area available for hydration." It has no remarkable difference in strength characteristics after 28 days, from the normal cement. It seems to us this is the correct prescription for a high early strength cement, for many of those which depend on a higher lime content for their special property are well known to retrograde with age. The real test of any good concrete, in our estimation, is that it improve with age.

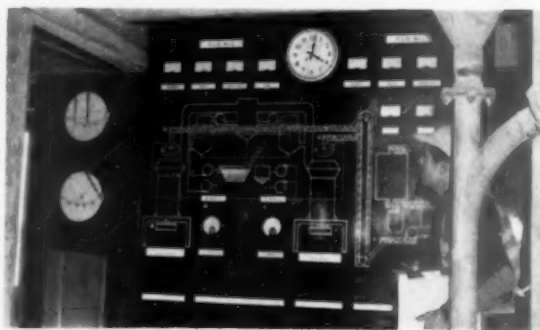
Vertical kiln plant. The raw materials are limestone and marl, presumably with the help of the fuel ash containing the necessary argillaceous minerals. The raw grinding and drying are done in one operation. Raw meal and low-grade coal are then pelletized into nodules, which are burned in two modern vertical or shaft kilns. It is said the kilns discharge cool clinker and that the flue gases are of such low temperature as to require only a wash-water treatment before discharging to the atmosphere. Control of the kilns is practically automatic as the accompanying illustration shows. Three laboratories are maintained, one for shift control, operating continuously, one for research work and one for mortar and concrete testing.

There has always been considerable objection to shaft-kiln manufacture of portland cement in the United States. The reasons given us at various times are both commercial and operational. However, shaft-kiln manufacture is in wide use in other parts of the world, and there has been comparable progress in design of such plants. We have always been curious about the failure of American manufacturers to take any interest in it. Their answers are, or have been, something as follows: (1) (Commercial) Capacity is too small for the overhead necessary to promote, advertise and sell the product. A million barrel a year plant used to be considered the absolute minimum. Today it is probably nearer twice that figure. (2) Too much labor, and labor in the U. S. is high priced; (3) Good coal is cheap in the U. S., and the industry can afford to put up with the lower heat efficiency of the rotary kiln.

The capacity of this Australian plant was originally 35,000 tons per year. If those are English or long tons of 2,240 lb., as we shall assume, this means an annual capacity of around 200,000 bbl., or about one-fifth of that of the smallest feasible modern rotary kiln plant. The plant has since been expanded to produce 120,000 tons per year or better than 600,000 bbl. Its cement is shipped in bulk and in 94-lb. bags, as in our country, but also in rather unique, air-tight, rubber-lined steel



Dr. Gottlieb is shown, foreground, in this view of plant



Kilns are controlled from this central panel

drums of 45-lb. capacity, with a handle like an ordinary pail. As a company advertisement states, when empty these drums make good pails for any purpose.

It would be interesting to know whether the method of manufacture here really does tend to produce a clinker of more uniform composition than in the rotary-kiln process. We can conceive that this is entirely possible, since there are so many variables in the rotary-kiln process that need not exist in the shaft-kiln process. For example, the composition of the clinker depends not merely on the accuracy of the raw mix, temperature and speed of the rotary kiln at any one time, but since it is essentially a chemical process depending on solid to solid reaction, the result is greatly affected by the relative sizes of the raw particles in contact or their access to each other at the required temperature at the right moment. Hence, it is not just a question of correct proportions of raw material, but whether they are mutually in a reactive form at a certain time, which because of the nature of the process is rather limited.

The bringing together of the raw materials under the best conditions for the chemical reaction in the rotary kiln process is thus more or less accidental, while in the shaft kiln the pellets can be very accurately and uniformly proportioned.

Please turn to page 118

PRODUCER

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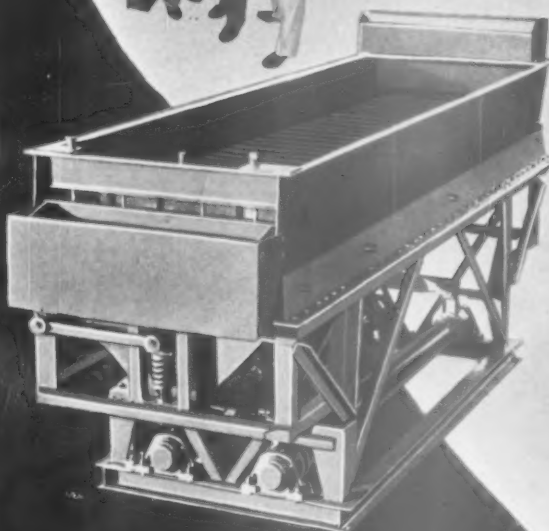
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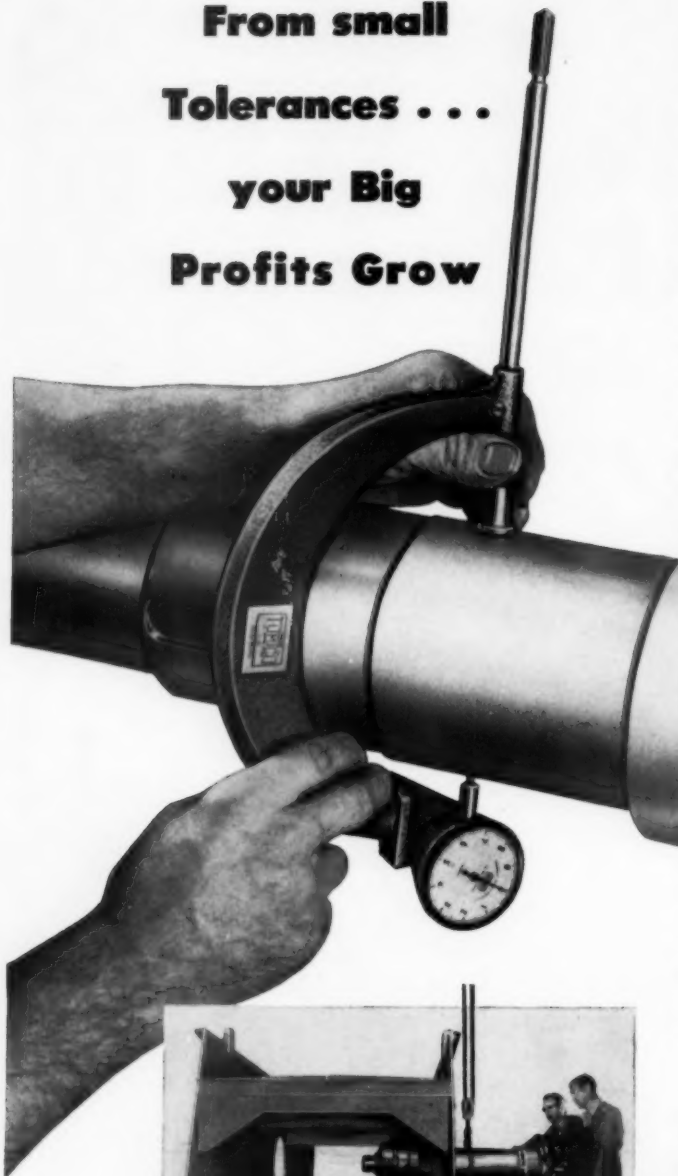
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Washington Letter

Edgar Poe

More cement Use indicated

Every indication points to greater use of cement, sand, gravel and crushed stone in fiscal 1960 by the Army Engineers. Congress has before it recommendations calling for \$864,800,000 for flood control, navigation and hydroelectric power development. This represents nearly \$56,000,000 more than Congress appropriated for the current fiscal year ending June 30, and \$226,200,000 more than was appropriated for fiscal 1958.

Many dams, reservoirs and other construction projects that will use a tremendous amount of cement and aggregate are on tap all over the continental United States for the coming fiscal year. In 1960 a total of 119 flood control reservoirs will be operated and maintained.

Unions seek Shorter week

Both members of Congress and officials in the executive branch of the government are being constantly reminded by labor unions and their economists that there is great need for a shorter work week. However, members of Congress and some officials, talking privately, doubt that a shorter work week will come for the steel workers or those of some of the other big industries this year.

Atom use to Break rock Is foreseen

A study by the Atomic Energy Commission, directed toward determining the feasibility of potential peaceful applications of nuclear explosives, could prove of marked importance to the rock products industries. Large volumes of earth and rock can be moved for engineering projects with nuclear explosives at costs below those of conventional methods.

The commission reports that nuclear explosives might be used to break up low-grade or inaccessible mineral deposits or deposits where the hardness of the rock makes the use of conventional explosives uneconomical. Similar explosives can

also be used to fracture large masses of shale and deposits of sand.

Many atomic projects are in the experimental stage, and will be for years to come. For instance, atomic electric power remains extremely expensive. Apparently it will be a long time before it can compete with fossil fuels.

New loans For small Business

The first new small business investment companies created under a 1958 act of Congress have been organized. Government money is provided as equity capital for long-term loans for small businesses. Under the law, the federal government matches the amount raised by private sources. There is a \$150,000 minimum, but no maximum for the investment companies.

Banks, insurance companies, financiers and businessmen are organizing the new companies. They may make loans up to 20 years with a possible 10-year extension. Interest rates will be higher than conventional loans. If the loans programs work out as the Small Business Administration believes they will, the lending companies will be valuable loan sources for many small firms.

Alaska Highways

Effective July 1, Alaska will begin participating in the federal-aid program on the same basis as the other 48 states. For years Alaska has annually contributed funds of not less than 10 percent of federal funds apportioned to it.

Inter-American Highway

The Bureau of Public Roads, which will supervise the greatest domestic highway construction program of all time during the coming year, will also have a series of foreign functions to perform. The bureau acts as agent for the cooperating Central American Republics in the purchase of equipment, supplies, engineering and other services for constructing the great Inter-American Highway. Under the foreign economic assistance act, the bureau is rendering technical assistance and acts

as agent for the buying of equipment and materials for carrying out highway programs in foreign countries. These services are currently being rendered for Ethiopia, Iran, Nicaragua, the Philippines, Turkey, Iraq and Liberia.

**ICC study
Being made**

Should the Interstate Commerce Commission be abolished? Some economists and students of government feel that it should. Even the ICC is considering a proposal that its activities be reduced in scope. ICC, which regulates railroads, pipelines, motor carriers, water carriers and freight forwarders, has a study underway. It is designed to recommend legislation, if needed, to trim its sphere to those things fundamentally affecting transportation. Usually a government agency or bureau wants to embrace more territory, rather than reduce its activities. Therefore, the ICC study is on the unusual side.

**Air, stream
Pollution**

The House Ways and Means Committee has before it a bill that would provide tax benefits to companies that install equipment to reduce air and stream pollution. Representative Glenard P. Lipscomb (R., Calif.) authored the proposal. The measure would permit firms a five-year write-off of the equipment investment.

**Steel wages
Set pattern**

Washington authorities believe that steel wage negotiations this spring will set the pattern for many industries. Expanded medical services will be a major issue. Meantime, federal mediators are expecting management to take a firm attitude toward union demands. About 155 major labor contracts covering more than 3 million workers expire in 1959.

**Oppose gas
Tax rise**

President Eisenhower's budget recommendation to raise the gasoline tax from 3 to 4½ cents a gallon ran into opposition in Congress and from various trade organizations, including the motor fuel industry itself. Only the Interstate Highway System would be slowed down if Congress fails to provide additional taxes, because sufficient yields are coming in for the primary, secondary and urban road building programs.

Other pending measures in Congress supported

by the White House and of marked interest to the rock products industries include: A four-year program of grants for construction of civil airport facilities; proposed loans and grants to aid areas of chronic unemployment; a six-year program for urban renewal grants; continuation of the current tax rate on corporate income; widening of unemployment compensation coverage.

**Unions oppose
Plant shifts**

Labor union officials are trying to either prevent or slow down to a walk the movement of plants and industries to areas of the country where unions are not so strong.

Federal mediators have indicated to management men that they are going to have a rougher time around the mediation table in the spring and summer months. Unions are not only seeking an increase in pay, but some are demanding more fringe benefits. A survey conducted by the United States Chamber of Commerce showed that among more than 1,000 reporting companies, fringe payments range from less than 6 percent to more than 60 percent of the payroll. The average fringe payment was 21.8 percent of the payroll or \$981 a year for each employee.

**Labor
Influence
In Congress**

The new Congress, perhaps the most pro-labor lawmaking body in the history of the United States, may not give labor everything it wants, but neither will a majority of the members vote for a proposal that might antagonize labor bosses. Labor, which has already demanded that Congress enact a New Dealish 10-point legislative program designed to promote "social welfare," is taking credit for the election of 12 new senators and more than 50 new members.

**Gore, Fallon
To head
Committees**

Senator Albert Gore of Tennessee and Representative George H. Fallon of Maryland, both Democrats, keep their chairmanships of the Senate and House Highway Subcommittees, respectively, in the 86th Congress. Both are strongly in favor of keeping the accelerated Interstate System "on schedule." However, the primary legislation involves the need for more federal funds, which first must get sanction from Chairman Mills and his committee and Chairman Byrd and his Finance Committee.

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Because these jobs, materials, locations, lengths of haul, working areas and production requirements vary so greatly . . . the size, capacity and features of these tractor-shovels must vary in order to meet specific requirements.

Two-wheel-drive "PAYLOADER" tractor-shovels are offered in three models with front-wheel-drive and one with rear-wheel-drive. These units have carry capacities up to 3,000 lbs., bucket tip-back of 40° at ground level enabling them to carry loads low and close to the machine for maximum stability and safety under all conditions.

They are compact and maneuverable for close-quarter operation indoors or outdoors. All of them have torque-converter drive and the model H-25 has a two-speed, power-shift transmission for the ultimate in ease of operation.

All of the two-wheel-drive models except the HA are equipped with power-transfer differentials which automatically provide more torque to the wheel with the best footing when slippery conditions are encountered. Gasoline or LPG power is available on all models; diesel power is available on both the HA and H-25 models.

The rear-wheel-drive model H-30R (not shown) has 3,000 lbs. carry capacity and in addition to stock-pile work can be used for digging and excavating. A wider range of attachments is also available.

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carry capacity**



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Model H-90

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Tremendous breakout force and bucket tip-back at ground level enable these "PAYLOADER" models to get maximum loads, and keep them during travel. Exclusive "balanced-design" provides the utmost

stability and underslung boom arms eliminate operator hazards during lifting and lowering movements.

The widest range of exclusive attachments and devices offered, make it possible for these four-wheel-drive machines to handle many other jobs such as pipe laying, compacting, blacktop spreading, ditch digging, scraping, clamshell work, log and lumber handling, snow plowing and the like.

You get maximum efficiency when your equipment is matched to your job. You get maximum versatility when this equipment can be quickly converted to do numerous specialized operations.

It will pay you to consult your "PAYLOADER" Distributor regarding the productive capacities and most efficient use of the various models and attachments.



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. . . is available without obligation showing the complete "PAYLOADER" tractor-shovel line and many of the useful attachments available for each model.

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Protection with Gulf products pays off in maintenance

GULF MAKES THINGS

At its new Pomona Quarry near Guilford College, N.C., Superior Stone Co. has about \$300,000 worth of heavy equipment including a bulldozer, air compressor, power shovels, crushers, the usual assortment of towers and conveyor belts—and 4 brand new Euclid dump trucks.

"I'm especially interested in the maintenance of the Eucs, because they're new, and because they do such brutal work," said Mr. Williams, Pomona Quarry Superintendent. "They carry about 23 tons of granite, up a 35% grade about every 15 minutes, 7½ hours a day. And they work in clouds of fine granite dust that even gets past a good filter."

So, with special emphasis on the Eucs, Gulf made a comprehensive survey of all equipment. A consolidated fuel and lubrication chart was drawn up, reducing the

number of fuels, oils and greases required—in line with manufacturers' specifications. This not only insured proper fueling and lubrication, it also simplified purchasing and stockpiling.

For the hard-working Euc engines, Gulf recommended high-detergency Gulfube Motor Oil X.H.D. and Gulf Dieselect—a fuel especially formulated for heavy duty diesel engine service.

After 15 months of tough service, and 2,100 hours of operation, the Euclid truck engines were examined by Mr. Williams. "Everything was clean," he said. "Almost no engine deposits. Only a minimum of sludge. Exhaust ports not clogged up. The program recommended by Gulf is paying off in every respect. It's helping us amortize our expensive equipment."



Up, over and into the hopper go some 20 tons of granite, being unloaded here by one of the hard-working Eucs at Pomona Quarry. Engines showed no harmful deposits after 2100 hours on Gulf Dieselect fuel and Gulflube Motor Oil X.H.D.

◀ Pomona Quarry of Superior Stone, near Guilford College, N. C. Superior Stone, headquartered in Raleigh, N. C., works a number of quarries in both Carolinas and Georgia. All powered equipment operates on Gulf fuels and lubricants.

savings at new quarry ...

RUN BETTER!

How's *your* equipment doing—on maintenance and performance? See how Gulf makes things run better. Just call a Gulf Sales Engineer at your nearest Gulf office. Meanwhile, write for 88-page "Contractors' Guide"—the maintenance "bible" for heavy equipment.

GULF OIL CORPORATION

Dept. DM, Gulf Building,
Pittsburgh 30, Pa.



Marion Williams, left, Superintendent of Superior Stone's Pomona Quarry, discusses his fuel and oil preventive maintenance program with Julian Lanier, Gulf Sales Engineer. ▶



How would you decide?

A round-up of actual day-to-day in-plant problems and how they were handled by management men



Does management have a right to "crack down" on employee parties?

What Happened: A department (almost all women) was getting "party happy." Every time an employee had a birthday, or got engaged or married, or went on leave, they chipped in and had a celebration—usually during lunch hour. It was getting so that it interfered with work. So the supervisor posted a rule—in effect—**NO MORE PARTIES.**

One day Nancy Heller approached the foreman and asked if they could use the coffee break one day the following month to bid goodbye to an employee going on maternity leave.

The answer was "no." Nancy repeated her request a week later and was again turned down. Persistent girl—she tried again and was refused again. Yet early next month a party was held—except that there were no decorations. Gifts were placed near the lady's machine during the coffee break, and the girls all watched her open the presents.

The supervisor didn't interfere as he didn't want to embarrass them. Later he called Nancy in and told her she was fired for refusing to heed his rule against parties. Nancy claimed:

Each incident given in this department is taken from a true-life grievance which went to arbitration. Names of some principals involved have been changed for obvious reasons. Readers who want the source of any of these cases may write to Rock Products.

1. I didn't plan the party. It was spontaneous.
2. Why single me out for punishment? There were five others there.
3. Firing is too severe for a good employee like me.

The supervisor defended his action:

1. I told Nancy "no" three times. How much more warning did she need?
2. It was obvious that she was the leader.
3. We must put a stop to parties as it is interfering with production.

Was Nancy:
Right? ☐ Wrong? ☐

What Arbitrator Stark ruled: "I cannot find that the dismissal was justified. (1) Nancy was no more guilty of violating a rule than the others; (2) no other employee was disciplined in any way; (3) Nancy had a good record and was a competent employee—she had never been disciplined before; (4) the offense itself was not sufficient to warrant dismissal. In our experience an infraction of this small dimension rarely calls for more than a minimum discipline. Some disciplinary action may have been in order, but we are not convinced it was proper to single out Nancy. We require the company to offer her immediate reinstatement with no loss of seniority or other rights."

Can a transfer to another job at no cut in pay be used to discipline an employee?

What Happened: John Berti, the foreman, wasn't too happy about Jim Tucker's work. For one, Jim seemed to spend a lot of time making phone calls. Secondly, he seemed to be wandering in other departments.

Berti decided to talk things over with the personnel director. "Why don't we transfer Jim to Ken's depart-

ment?" the personnel man suggested. "There he'll get closer supervision because Ken hasn't got as much territory to cover as you have."

The next day Jim found himself transferred. He filed a grievance and the case went to arbitration. The company didn't understand what Jim was so excited about. It said:

1. We just want to keep a closer eye on him so we transferred him. We have that right.
2. There's no cut in pay — his hours are the same—his job just like the other one. In fact, the working conditions are a little better. Jim has no case!

Jim counter-argued:

1. I do have a case. Money isn't everything. I like my other department—more friendly people.
2. If this transfer is a discipline then why wasn't I warned before? The company has a warning system. Why wasn't it used? You can't transfer a guy for discipline without first giving him a chance to improve whatever he's been doing that's bad.

Was Jim:
Right? ☐ Wrong? ☐

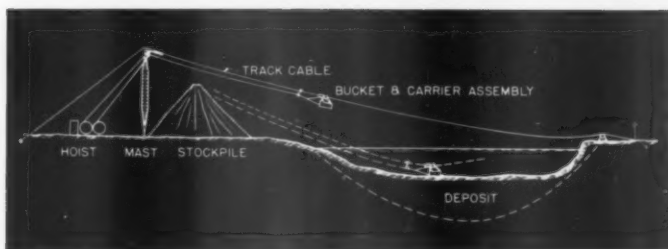
What Arbitrator Stutz ruled: "There are many aspects of a job, other than pay, which employees value. The testimony shows that the foreman never talked to Tucker about his wandering and excessive telephone calls. The company certainly can take action to prevent an employee from wandering around and from excessive use of the telephone for personal calls. A sudden transfer, as I see it, was a disciplinary action. The employee should have first been warned. Tucker should be reinstated to his old department with the understanding that the transfer he had been given is a warning, and that repetition of the offense will permit the company to take whatever action it reasonably sees fit."

(Continued on page 32)

FROM PIT TO STOCKPILE...

Dig and Haul at Lowest Cost with a Sauerman Slackline

DIGS AND HAULS—New Sauerman Slackliner Bucket is especially designed for tough digging. It inhauls at high speed, dumps automatically, and returns to digging point by gravity.



STOCKPILES MATERIAL—Regardless of long hauls, the Slackline builds a large surge pile to allow charging the plant at any desired rate. Plenty of material is in ready reserve for seasonal or unexpected increases in schedule.

Operating costs as low as 8¢ per yd. for labor, power and maintenance are reported by Slackline Cableway owners when digging free-caving material at average depth and haul distances.

These low costs are achieved by using just one machine—the new Sauerman Slackline Cableway. Multiple equipment is not needed to supply your required tonnage. For example, on an average haul and digging depth, a single medium size machine will charge a 200 tph. plant.

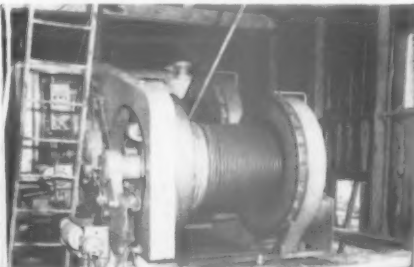
The high Slackline mast permits building a large pile which can supply plant demands through a plate feeder and tunnel conveyor, front-end loader or clamshell. The new Sauerman torque converter diesel-hoist automatically matches power to load demands and is designed for continuous duty. Fluid drive cushions out shock loads to reduce fuel and maintenance costs, extend cable life.

Increasing land values and depleting resources make it necessary to get all the material out of your deposit. You can do this with a Sauerman Slackline. The machine will dig from ground level to deep under water and keep your plant running additional years at the lowest possible operating cost. Several pits are now operating Slacklines on 1000-ft. spans with average hauls of 500 to 700 ft. and from 100-ft. depths.

Write or call, giving your tonnage requirements, depth and length of deposit—if available. We will promptly supply more information on Slackline Cableways, and show you how to save with a Sauerman.



CONTROL IS REMOTE, EFFICIENT AND SAFE—Control station can be conveniently located at any strategic point in plant area. Operator can watch entire operation. Fatigue is minimized and personal danger eliminated.



TORQUE CONVERTER INCREASES PRODUCTION, CUTS MAINTENANCE—Now available, the new Sauerman Torque Converter Hoist automatically matches power to load, provides a smooth and steady flow of material, reduces fuel, maintenance and cable costs.

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Linden 4-4892 • Cable CABEX—Bellwood, Illinois

Crescent Scrapers • Slackline and Tautline Cableways • Durolite Blocks

Labor Relations continued from page 30

Can an employee be fired for taking time off to attend a religious meeting?

What Happened: Jess Lyle was very devout. He belonged to a small religious group which met once a year in Virginia for special ritual. A month before the scheduled meeting, Mr. Lyle asked his supervisor for a week's leave of absence, to attend the meeting. After some days' deliberation, the foreman refused the request for leave on the grounds that he had already taken too much time off during the year. He insisted that he would go anyway, and was warned that if he did so, he would be fired.

He took the week off—and was discharged. His case came to arbitration. He argued:

1. This is discrimination. You can't fire somebody for his religious convictions.
2. When you hired me you knew I was religious and would be expected to observe holidays and such.
3. A person shouldn't have to choose between his job and his religious duties.

The company answered this delicate question like this:

1. We can't cater to every religious group, as people would always be taking time off.
2. Leave of absence is not an employee right. It is granted only at management's convenience.
3. We allow certain religious holidays, but cannot agree to let employees take off for religious affairs of their own choosing.

Was the company:
Right? ☐ Wrong? ☐

What Arbitrator Stark ruled: "The observance of all religious rites is not an employee's contractual right under the contract. This makes sense. To hold otherwise is to conjure up a constant parade of workers from various religious backgrounds, coming and going to work on this day or that—depending on their religious beliefs. Our society, rightly or wrongly, has subordinated religion to the more mundane aspects of life. It requires citizens to conform to certain accepted practices—not at the peril of their lives, but certainly at the peril of narrowing the area of potential employment. If one's religion required one to pray between one and three each afternoon, there are a number of jobs one couldn't hold. Discharge does seem rather strong in view of the employee's obviously sincere

convictions. Yet, when asked whether he would do the same thing again, if reinstated, Mr. Lyle answered firmly 'yes.' Under the circumstances, there is no point in ordering him reinstated, only to defy management's decisions once more."

Can an experienced employee refuse to do low-grade work?

What Happened: Being shorthanded one day, the foreman asked Sewall to take on some extra duties. The assignment was outside his regular and usual duties, but would have taken only about 1½ hours. Sewall's regular duties did not keep him occupied all that day so he had the time.

Sewall refused. He maintained that it was a company practice to give such "low grade" work to junior employees. The company had similar refusals from other workers, and it decided on its own to take this issue—"right to assign work"—to arbitration. It argued as follows:

1. We have no job descriptions in our plant so Sewall cannot claim any violation on our part when we assign him to any work we want to.
2. We have plant-wide seniority but this applies only to layoffs and recalls.
3. We have assigned such jobs to junior employees, but that's not a rigid practice. We need flexibility in order to keep men busy.

Sewall claimed:

1. Others have refused such assignments before, so I have a similar right.
2. I'm a senior man. I shouldn't be given such low-grade work. The foreman should find junior workers to do those chores.

Was the company:
Right? ☐ Wrong? ☐

What Arbitrator Beatty ruled: "The alleged right of an employee to take the law into his own hands, interpret the contract in his own manner, disregard a request of his foreman, engage in a debate on the floor and refuse to comply, is so contrary to what is generally accepted in labor-management relations that it would require a very strong and clear provision in the contract to support it. Carrying the worker's interpretation to its ultimate conclusion would mean that every employee in the plant, except the one most junior, could refuse an unwanted assignment or extra or additional duties,

and that management would of necessity have to find the lowest man on the totem pole before it could rightfully order the work done. Such a situation could become impossible, and I do not believe that this management ever intended to contract for such an intolerable practice." Management's position was upheld.

Should a "warning notice" be friendly?



What Happened: The company had a formal system for handling discipline. Before any employee was punished, the foreman was required to warn the employee of his offense and record his warning with a note in the employee's file.

During a coffee break, Bill Blake ran into his foreman at the snack bar. After exchanging some pleasantries about a bowling match, the foreman said: "Bill, can't you do something about speeding up your work? Why don't you get on the ball and do your job? I know you can do better." With that the foreman slapped Bill on the back and the conversation ended.

Two weeks later Blake got transferred to another job. He took his case to arbitration on the grounds that the company did not follow its usual procedure of warning an employee before taking action.

The foreman reminded Bill of their coffee-break meeting at the snack bar. "That wasn't a warning—that was a friendly chat," Bill maintained.

Was Bill:
Right? ☐ Wrong? ☐

What an Arbitration Board ruled: "The friendly way in which Blake was talked to and the atmosphere of the meeting does not indicate that a warning or reprimand took place. The company did not follow its regular procedure, and Blake is entitled to be put back on his old job. This decision, however, should constitute a warning to Blake . . ."

END



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BUY
the BRAND
with the
SIDE
HANDLE**

Easy to Carry ... Easy to Pour

FIELD REPORT

TO:

B.D.

RE:

Handle Order

Showed Mr. [redacted] our new Side Handle Bag...some of his customers had already mentioned it to him. He saw great benefits for both his dealers and their customers. He immediately recognized that it would be helpful in opening new distribution and getting more merchandising cooperation from dealers. Showed him our strength tests and the heavy abuse our handle could take. Got the order. Left him our Sales Promotion and Dealer Aid kit which he said would be useful to his Sales and Advertising Department. He plans a big promotion built around this sales "extra".

*Hudson Bags
increase
your sales
- cut your
costs!*



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ROCK PRODUCTS, March, 1959

Heavy Construction Operators

GO FORD-WARD for greater payload... power..

"Our Ford trucks haul up to a ton-and-a-half more payload per trip"

*says William R. Collins, V.P.
William Collins and Sons, Fargo, N. D.*

"We switched to Ford trucks in 1951 because we found we could haul 1½ tons more per trip. Now we have 124 Fords, including 80 T-700's. They're economical to operate, too—we get up to 6 miles per gallon. Our drivers like Ford's power steering and peppy 302 HD V-8 engine. We like Fords because we know we can always get Ford parts quickly if we need them. That means our trucks aren't down over one day, even on a major overhaul."



"We trade every two years and find that Ford trucks bring highest resale price"

*says John McCormick, Sec.-Treas.
Northern Improvement Co., Fargo, N. D.*

"We keep our Ford T-700's in top condition year round, and it pays off. We get a higher resale price when we trade every two years. Fords have the ability to perform under the rugged conditions in our work. Power steering on our tandem dumps makes them easy to handle on-or off-the road."



"Our drivers like Ford's power . . . they get heavy loads under way fast"

*says George C. Wilson, General Superintendent
Schultz and Lindsay Construction Co., Fargo, N. D.*

"Ford's HD power in our T-750's gets heavy loads under way fast . . . helps keep us on schedule. And we can haul bigger payloads doing it . . . up to a yard more, legally, every trip. We've never had frame trouble either. They're rugged, durable trucks and if we ever need Ford parts, we can always get them at the nearest town."

FORD TRUCKS COST LESS

LESS TO OWN... LESS TO RUN... LAST LONGER, TOO!



..resale value!

NOW!
CERTIFIED PROOF
FORD TRUCKS
COST LESS



'59 Ford Pickups Win Economy Showdown U.S.A. —average 25.2% better gas mileage!

Impartial tests of the 1959 pickup models of all six makes prove conclusively that Ford's ½-ton pickups equipped with Short Stroke Sixes are the economy champs for '59.

HOW TESTS WERE MADE

Standard six-cylinder models of the six leading half-ton pickups first were put through exhaustive road trials. All '59 trucks—Ford and competitive—were bought from dealers, just as you would buy them. After at least 600 miles break-in, all were brought up to manufacturer's recommended specifications.

The trucks were then tested — by America's leading independent automotive testing firm—at constant speeds of 30, 45 and 60 miles an hour. Next came stop-and-go tests, ranging from moderate city traffic to normal retail delivery operation. Acceleration rates were carefully timed in each gear to insure accurate results for all makes.

HOW NEW '59 SIXES RATE IN GAS MILEAGE

'59 FORD SIXES GIVE	25.2%	31.1%	9.6%	42.6%	22.0%	25.2%
	more miles per gallon than Make "C"	more miles per gallon than Make "I"	more miles per gallon than Make "G"	more miles per gallon than Make "D"	more miles per gallon than Make "S"	more miles per gallon than the average of all makes

The '59 Ford Sixes, in every test, averaged more miles per gallon than every other make! Combining all tests, the '59 Fords led the average of all other '59 pickups by 25.2%.

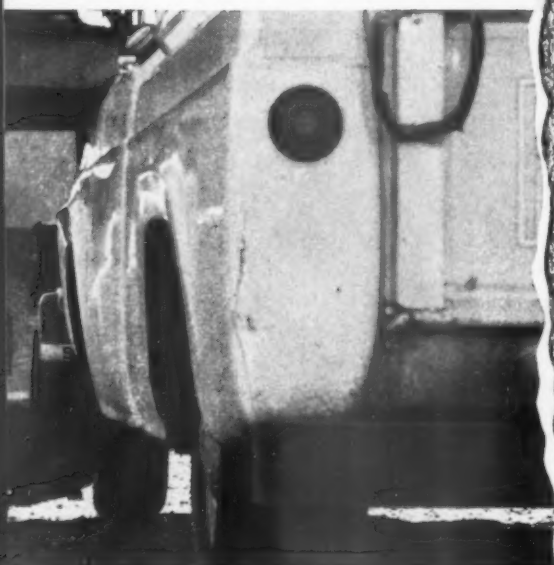
WHAT'S THE SECRET?

How can a '59 Ford Six make four gallons do the work of five in other trucks?

First, of all pickup Sixes, only Ford has modern Short Stroke design. This new type of engine is basically far more efficient than long-stroke Sixes of other pickups. Example: Ford's Six delivers more usable horsepower than any other pickup Six.

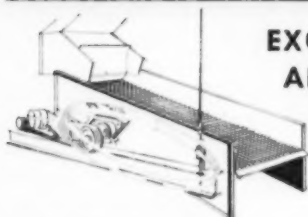
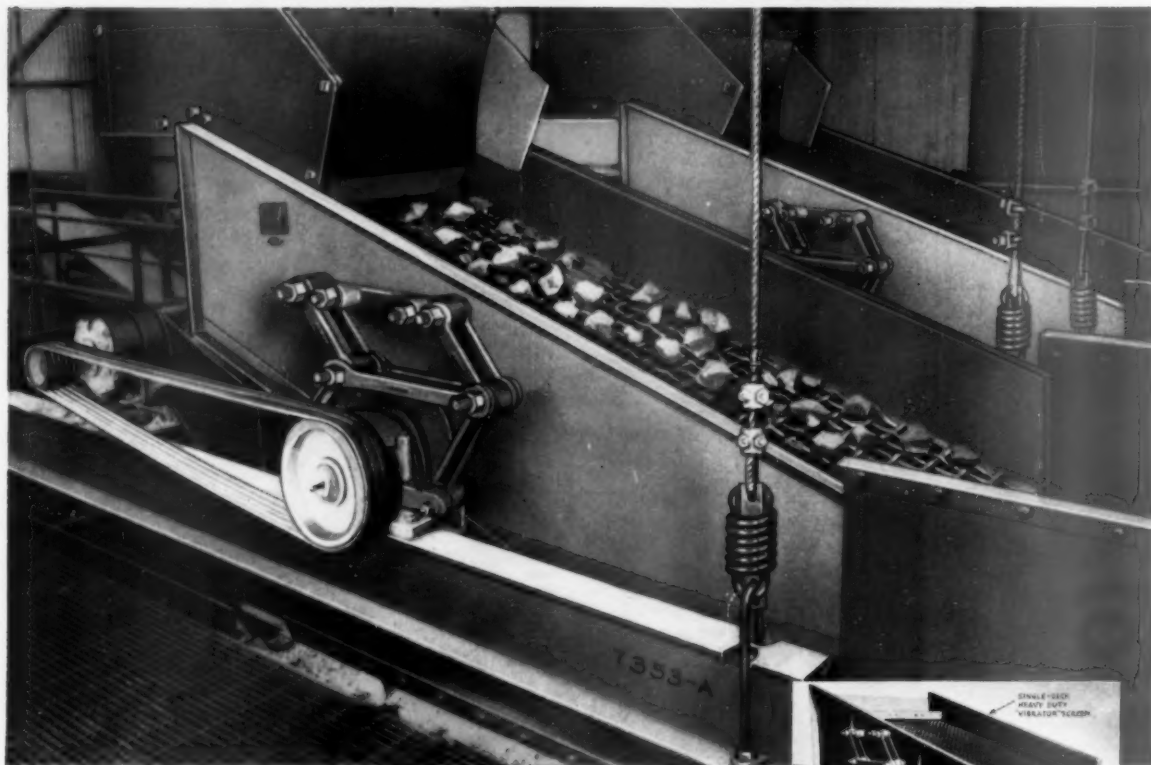
Second, to this modern engine Ford has added a new economy carburetor. By metering fuel more precisely in both low- and high-speed ranges, Ford's new carburetor boosts gasoline mileage in every type of driving. And Ford's Economy Carburetor is standard at no extra cost.

Your Ford Dealer now has the complete report of Economy Showdown U.S.A. Why not call or visit him today and get the whole story firsthand?



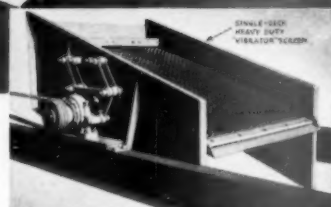
STEPHENS-ADAMSON

VIBRATING SCREENS

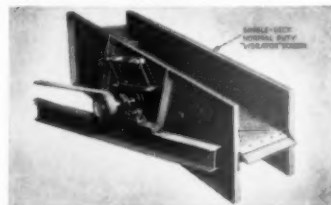


**EXCLUSIVE CIRCULAR MOTION
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PROVIDES HIGH CAPACITY,
ACCURATE SCREENING**

STEPHENS-ADAMSON Vibrating Screens combine strength with extreme accuracy in high capacity sizing operations. Vibration is produced by rotation of an eccentric shaft on which balance weights are mounted. The shaft is provided with self-aligning ball and roller bearings. Circular motion and counterflow action of vibrating screen provides for each particle passing over screen openings in every conceivable position before being discharged as oversize. Screen panels are reversible and screen body adjustable for maximum flexibility and life.



STYLE NO. 400 — Heavy duty vibrating screen will handle heaviest duty scalping and screening. Sub-frame for direct floor mounting or suspended mounting.



STYLE NO. 300 — Normal duty vibrating screen. Rubber seal strips between panel sides and screen body furnished with panels of less than $\frac{1}{2}$ " openings, preventing leakage and providing guidance over openings.



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BULLETIN
757**



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PEOPLE

IN THE NEWS



S. B. Webb



A. B. Ward



J. A. Morris

Four named to new posts at Marquette Cement

SAMUEL B. WEBB, JR., former assistant director, has been appointed director of operations of Marquette Cement Manufacturing Co., Chicago. He fills a position vacant since the retirement of J. H. Howe a year ago.

Mr. Webb was appointed assistant director of operations in 1957. Previously, he was assistant chemist at Marquette's Oglesby, Ill., plant, chief chemist at the Brandon, Miss., plant and superintendent at Brandon. He joined the firm in 1950. Mr. Webb holds a degree in chemical engineering from the University of Cincinnati.

In other moves, the firm appointed

A. B. Ward as sales manager of its Nashville division, named John A. Morris sales chief for the area served by its Rockmart, Ga., plant and appointed Carl L. Morris assistant director of engineering.

Mr. Ward, a Marquette sales representative in Tennessee for 17 years, has lived and worked in that state all his life. John Morris replaces J. O. Lane as sales manager in the Georgia area, following Mr. Lane's retirement in January. Mr. Morris has been a Georgia area salesman for the firm for 12 years. He was educated at the University of Chattanooga.

Aglime producers give two scholarships

TWO AGRICULTURE STUDENTS at Ohio State University have won \$250 scholarships for outstanding achievement in their study of agronomy. The Processed Limestone Association awarded the prizes recently to Paul Henderlong and Tom McCullough, at a meeting of the Ohio Fertilizer and Lime Conference. President O. E. Hamilton, J. M. Hamilton & Sons Co., Marion, Ohio, and scholarship committee chairman Philip E. Heim, Carbon Limestone Co., Lowellville, Ohio, both of the limestone group, were present.

Lynch is named assistant plant superintendent

THOMAS M. LYNCH, JR., has been promoted to assistant superintendent of New York Trap Rock Corp.'s West Nyack (N.Y.) plant. He has been employed at the firm's Clinton Point, N.Y., plant for the past nine years, recently as lead mechanic in the maintenance crew. Mr. Lynch received an A.B. degree in finance from Union College in New York state.

Ideal Cement names Baxter as plant manager

JACK L. BAXTER, formerly assistant plant manager at the Redwood City, Calif., plant, recently was named plant manager at Ideal Cement Co.'s San Juan Bautista, Calif., plant.

Marcon named plant manager at Alpha's Catskill plant

FRANK B. MARCON has been promoted to plant manager of the Catskill, N.Y., plant of Alpha Portland Cement Co., Easton, Pa. He replaces J. A. Anderson, who has resigned.

Mr. Marcon joined Alpha in 1954 as plant engineer at the Catskill plant. A year later he was transferred to the Martins Creek, Pa., plant. In 1956 he returned to Catskill in the position of assistant superintendent.

Hank, five others promoted at National Gypsum

LEONARD L. HANK, Melvin F. Cerruti, Eugene W. Odenwaldt, S. David Skinner, John G. Stapler and Maurice C. Crook were named to new positions recently by National Gypsum Co., Buffalo, N.Y. Mr. Hank, promoted to vice president for operations in October, is now a director of the firm. Mr. Cerruti moves up to the new

post of vice president in charge of dealer sales. Mr. Odenwaldt succeeds Mr. Hank as vice president, manufacturing. Mr. Skinner assumes the new position of director of engineering. Mr. Stapler is new general production manager of the firm, and Mr. Crook is director of engineering.

(Continued on page 40)



Hank



Cerruti



Odenwaldt



Skinner

One P&H sells another because P&H "PROFIT·TONS" reduce quarrying costs all day...every day

More responsive dipper action, as much as 30% more bail pull, faster swing and *maximum* availability all add up to lower cost per ton—more net profit for users of P&H Electric Mining Excavators.

As much as 10% more production with P&H Electrics in leading mines and quarries throughout the world is the end product of patented *exclusive* P&H design principles.

MAGNETORQUE® . . . the most advanced hoist drive known for electric excavators. This hoist drive electro-magnetically transmits digging power from an A.C. hoist motor direct to the dipper. It provides higher bail pull and faster dipper fill with an *exclusive* degree of protection for the hoisting machinery from digging stresses.

ELECTRONIC CONTROL . . . the most responsive control for electric excavators, it accomplishes the fastest work cycles known. This closed circuit, adjustable energy system has no moving parts, and offers reductions in control maintenance expense of as much as 80%.

Also, with P&H you get single source responsibility—an exclusive advantage experienced only by users of P&H Electrics. P&H manufactures their own electrical equipment—*designed specifically for electric shovel service*—as well as mechanical equipment.

P&H MINING EXCAVATORS



HARNISCHFEGGER CORPORATION
Construction & Mining Division
Milwaukee 46, Wisconsin

P&H MINING EXCAVATOR LINE: 3¼ through 10 cu. yd. capacities



Illustrated is one of two 5 cubic yard P&H Model 1500 Mining Excavators owned by a leading Eastern quarry. It is shown loading trap rock for crushing plant at their quarry located in the state of New York.



PEOPLE IN THE NEWS

(Continued from page 37)



Stanger heads asbestos, asphalt sales at Ruberoid

RHYS L. STANGER, formerly sales manager of the St. Louis, Mo., district, has been appointed manager of asphalt and asbestos products sales of The Ruberoid Co., New York City. The firm also announced that Charles L. Haugh has been made sales manager of the St. Louis sales district, and George J. Garthwaite has become assistant sales manager of the New York district.

Mr. Stanger joined Ruberoid, a producer of wallboard, siding, shingles and roofing, in 1950 as a sales representative. In 1956 he became sales manager in St. Louis. He holds a B.S. degree from the University of Pennsylvania, and an M.B.A. degree from New York University. Mr. Haugh, a sales representative since 1947, became assistant sales manager in New York in 1956. Mr. Garthwaite has been a representative in New Jersey and the Philadelphia area since 1952.

Lone Star names Sawyer

H. A. SAWYER, president of Lone Star Cement Corp., New York City, has been elected chairman of the board. He succeeds R. A. Hummel, who is retiring after serving as chairman since 1952. Mr. Hummel continues as a director, and Mr. Sawyer remains president and chief executive officer of the firm.

Mr. Sawyer succeeded Mr. Hummel as president in 1952, after serving as a vice president and manager of the Louisiana Division, at New Orleans, from 1931. Mr. Hummel joined the firm in 1919 as superintendent of

its Sierras Bayas, Argentina, plant. He served as general superintendent of South American operations before being elected executive vice president in 1941, and president in October of that same year.

New staff member



CHARLES R. KLUGE, former managing editor of *Industrial Laboratories* and *Industrial Science & Engineering* and former editor of *Research & Engineering—The Magazine of Data-mation*, has joined the staff of ROCK PRODUCTS as an associate editor.

A native of Gary, Ind., Mr. Kluge majored in business administration at Indiana University and in journalism at Northwestern University. He served his apprenticeship in the publishing field as managing and production editor of *Lubrication Engineering*, official journal of the American Society of Lubrication Engineers.

Holub heads Missouri limestone group

R. W. HOLUB of Concrete Materials and Construction Co., Cedar Rapids, Iowa, is new president of the Missouri Limestone Producers Association. A field representative for his firm in southern Iowa and northern Missouri, Mr. Holub is also a director of the limestone group. The other two directors are Virgil Smith, Smith Quarries, Belle, Mo., and William Thompson, Jr., Dietz Hill Development Co., Kansas City, Mo. Committee chairmen elected by the group are R. W. Holub, highways; Bob Dillon, convention; Art Alvis, publicity and promotion; Mac Johnson, legislative; William Thomson, Jr., membership; Adolph Adrian, PSC committee and Frank Snyder, ASC committee.

Leuenberger named manager of Chemical Lime

HANS LEUENBERGER has been named general manager of the Chemical Lime Co., Portland, Ore., replacing Robert Vervaeke. A native of Switzerland, Mr. Leuenberger came to this country in 1950. Since that date he has worked as assistant administrative manager of technology with the Electro-Metallurgical Co., New York City, makers of ferro-alloys and other metals. Mr. Leuenberger became a U. S. citizen in 1956.

Jaques made USC trustee

EBER JAKUES, general sales manager of Consolidated Rock Products Co., Los Angeles, Calif., has been named a trustee of the University of Southern California. Mr. Jaques, who was elected to a two-year term on the eight-man board of trustees, is also president of the university's general alumni association.

McCorkle heads USG gypsum rock sales

JAMES P. MCCORKLE has been named director of gypsum rock sales for United States Gypsum Co., Chicago. He had been serving as general manager of quality and service prior to his new appointment. Mr. McCorkle has been located at Chicago headquarters since joining the firm in 1920. Thomas F. MacLennan has been named quality field manager.

OBITUARIES

Thomas A. S. Harper, owner and operator of Harper Quarry, Elberton, Ga., was killed November 19 in a quarry accident. Mr. Harper died as the result of an air tank exploding. He was 46 years old.

Roy Rice, owner of the Paint Valley Sand and Gravel Co., Bainbridge, Ohio, died December 9. Previously, Mr. Rice had owned the Fredericktown Sand and Gravel Co., Fredericktown, Ohio. He was 49 years of age.

Thomas L. Carnes, sales manager for The Arundel Corp., Baltimore, Md., died December 29. He joined the firm in 1938, and had been in charge of sales of concrete aggregates and road materials. He then became sales manager for the firm.

**only
the**

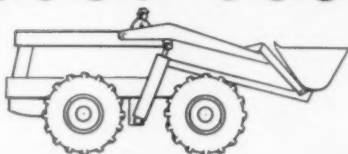
HYDRA-DRIVES® BDB

OFFERS ALL THESE MAJOR ADVANTAGES

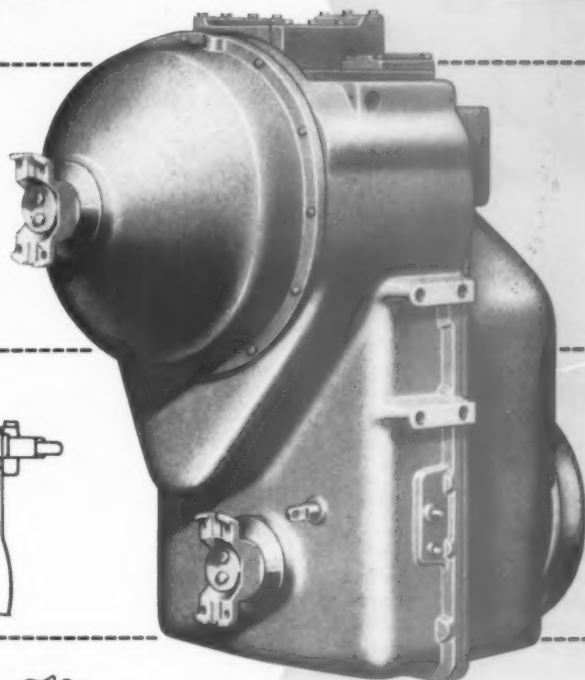
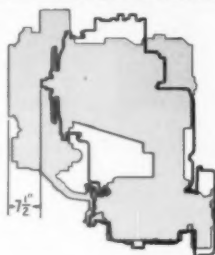
IN FULL-POWER SHIFT TRANSMISSIONS
for equipment from 60 to 175 h.p.



1. 4 speeds forward and reverse. All power shifted! Provides maximum horsepower to load under all load conditions.

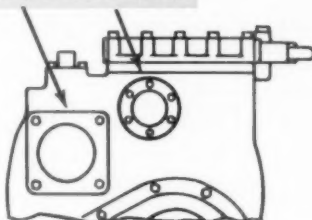


2. Integral design. Torque converter, transmission, oil passages, valving and oil sump are in one compact housing—7½" shorter than comparable models.

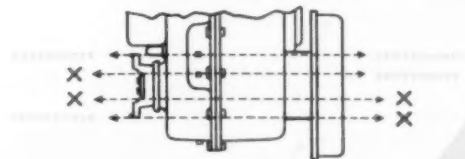


3. Dual reduced speed pump drives. Pumps can be driven at engine speed or ¼ engine speed for longer life and increased horsepower to pump load. Single pump drive is also available.

4/5 ENGINE SPEED



4. Full disconnect provides four combinations of split drive . . . from torque on both shafts, to both shafts in disconnect.



SPECIALLY DESIGNED FOR SMALLER INSTALLATIONS

Rockwell-Standard's new model Hydra-Drives Full Power Shift Transmission is now available in sizes especially designed for smaller installations, such as front end loaders, fork trucks, scrapers, crane carriers, rubber tire tractors and military vehicles.

In addition, the Hydra-Drives BDB offers easier servicing and maintenance. There are fewer moving parts and bearings. The simple, rugged countershaft design and spur gears simplify maintenance.



ROCKWELL-STANDARD CORPORATION
TRANSMISSION AND AXLE DIVISION
DETROIT 33, MICHIGAN



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INDUSTRY NEWS



Seen at the annual meeting of the Expanded Clay and Shale Association in Cleveland were these key men in the lightweight aggregate industry: seated, l. to r.—Frank Leftwich, D. M. Groves, R. G. Hardy, Melvin Cruzen, R. A. Utiger; standing, l. to r.—L. E. Pfeiffenberger, B. K. Powers, Leo Scillia, Norman Briggs, W. W. Karl, W. D. Heney, Ben A. Batson, Executive Secretary T. R. Berger

ECSA convention spotlights research progress

ELECTION OF OFFICERS, choice of a site for its mid-year meeting and reports of significant research progress highlighted the annual meeting of the Expanded Clay and Shale Association, held at the Hotel Cleveland, Cleveland, Ohio, January 8-10. The association is made up of lightweight aggregate producers from a 10-state area.

Ronald G. Hardy, Onondaga Brick Corp., Syracuse, N.Y., was named president, moving up from the vice presidency. He succeeds R. A. Utiger, Cinder Concrete Products Co., Denver, who served as ECSA head in 1957 and 1958. Melvin G. Cruzen of Light Weight Aggregate Corp., Livonia, Mich., succeeds Mr. Hardy as vice president. David M. Groves, Shalite Corp., Knoxville, Tenn., was re-elected secretary-treasurer.

Named as directors were the officers and the following: William W. Karl, Lehigh Materials Co., Tamaqua, Pa.; Leo A. Scillia, Plasticrete Corp., Hamden, Conn.; Ben Batson, Shalite Corp.,

Knoxville, Tenn.; W. D. Heney, North Central Lightweight Aggregate Co., Minneapolis, Minn.; A. S. Johnson, Carolina Tuff-Lite Corp., Salisbury, N.C.; B. K. Powers, Virginia Lightweight Aggregate Corp., Roanoke, Va., and Frank Leftwich, Sayre & Fisher Co., Sayreville, N.J.

New York City will be the locale of the ECSA mid-year meeting June 17-20. This will be held in conjunction with the Engineering Progress Exposition at the Hotel Commodore, sponsored by the National Society of Professional Engineers and the New York State Society of Professional Engineers. The ECSA will have a display booth in the grand ballroom of the Hotel Commodore at 42nd St. and Lexington Ave.

At the open sessions of the association Thursday and Friday mornings, a presentation on the possible application of the Tornado impact crusher to expanded clay and shale reduction was given by Thomas E. Bridgewater, president of the Werco Steel Co., Chicago.

The handling of highly abrasive material is a familiar challenge to lightweight aggregate producers, he pointed out, particularly from the aspect of cost. Several installations of this crusher in the crushed stone and sand and gravel industries have shown very good results. Werco is presently crushing 99 percent silica at a metal replacement cost of about 10 cents a ton. Mr. Bridgewater illustrated his talk with pictures.

A report on "Design Practices for Selecting Proportions for Structural Lightweight Concrete" was presented by L. E. Pfeiffenberger, technical director of the association. This was a preliminary discussion of designs for lightweight aggregate plastic mixes, as developed in the association-sponsored testing program. Following Mr. Pfeiffenberger's report, field practices of producer members and contractors were discussed in an open forum.

A tour of the sintering laboratory and pilot plant of the Dwight-Lloyd division of the McDowell Co. was the feature of Thursday afternoon's session. Association members and guests were escorted on the tour by Harold E. Rowen, general manager of the division, and Tom Ban, director of the laboratory.

Friday's sessions included a talk on "Introducing Lightweight Aggregate in a New Territory" by W. D. Heney, executive vice president and sales manager of North Central Light Weight Aggregate Corp., Minneapolis.

The appointment of Mr. Heney as chairman of the membership committee and B. K. Powers as chairman of the technical problems committee was announced.

City sells rock crusher

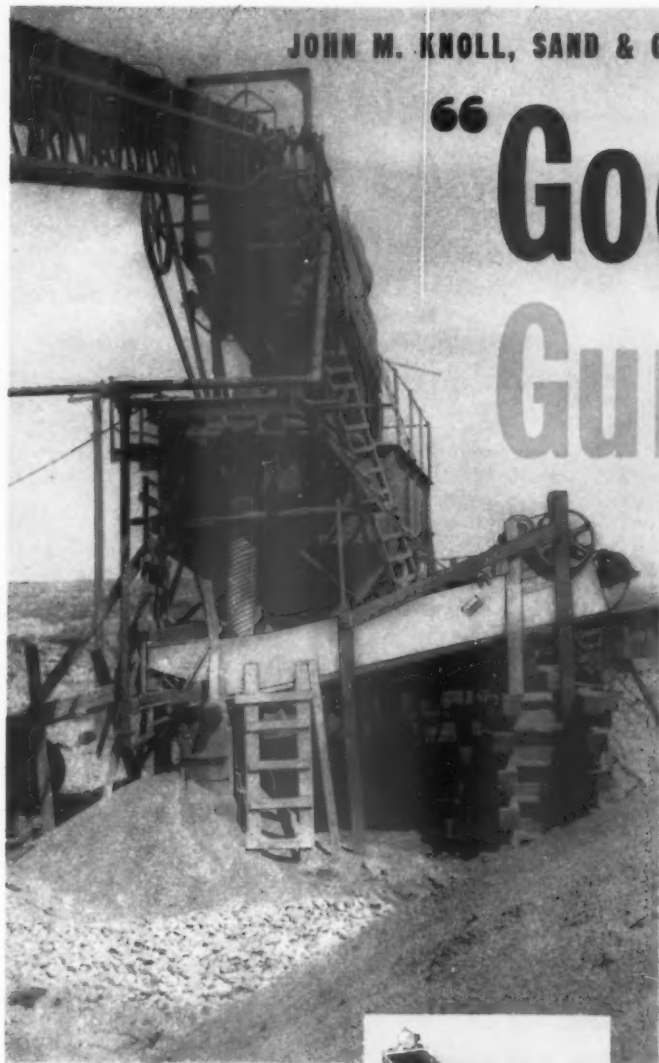
THE CITY COMMISSION of Raton, New Mexico, has accepted an offer of \$7,500 for its rock crusher and an agreement for gravel purchases from Frank van Buskirk and John Graham, both of Raton. This took from the city's hands what commissioners felt had turned out to be a white elephant. The crusher, purchased a year before for \$8,333, had been little used by the city. An order for 4,000 cu. yd. of gravel was placed with the new owners.

(News continued on page 11)

JOHN M. KNOLL, SAND & GRAVEL, GLENDIVE, MONTANA SAYS:

"Good-bye to Gumbo and Debris"

thanks to an Eagle
Coarse Material Washer
with Trash Remover!



EAGLE SINGLE SCREW COARSE MATERIAL WASHER-DEWATERER

America's No. 1 Coarse Material Unit. 18" to 24" screws handle material to 2" — 30" and 36" screws material to 2½". Do excellent cleaning job. Totally enclosed gear drive. Water-lubricated lower bearing has long service life.

EAGLE DOUBLE SCREW COARSE MATERIAL WASHER-DEWATERER

Have double the capacity of single screw units. Handle material up to 2½" in size. Both single and double screw units can be equipped with paddles in place of screw flights to meet special conditions.

EAGLE COARSE MATERIAL SCREW WITH TRASH REMOVER

For removal of chips, coal, vegetation, some gumbo and shales, and other materials buoyant enough to be floated by the rising water current in the tub pool. For removal of small shale or coal particles the Eagle Auxiliary Shale & Coal Remover (not shown) is available.



If you are bothered by troublesome foreign matter in your coarse material, take a tip from John M. Knoll of Montana. He installed an Eagle Coarse Material Washer-Dewaterer with built-in Trash Remover at his screening plant early in 1955 and said "goodbye to gumbo and debris".

The material is loosened up by paddles in the pool area of the washer and the gumbo, vegetation and debris are flushed up and out through the Trash Remover — the wanted material is heavier and settles in the tub where it is further washed. The screw dewaterers the material on its way to be discharged. It's simple, efficient, economical as many producers have learned. Get the facts —Send for Catalog 58.

EAGLE IRON WORKS
ENGINEERS • MANUFACTURERS
137 Holcomb Ave., Des Moines, Iowa



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Interior of a Hardinge 11½' x 12' Rod Mill with 85-ton rod load, 1000 horsepower.

Hardinge ROD MILLS

Sizes range from 2' to 11½' shell diameter and up to 1000 horsepower.

Types include trunnion overflow and peripheral discharge for both wet and dry grinding.

Applications include both open and closed circuit arrangements for ores, aggregates, concrete sand, cokes, and abrasives.

Complete specifications on request.
Ask for Bulletin 25-C-7.



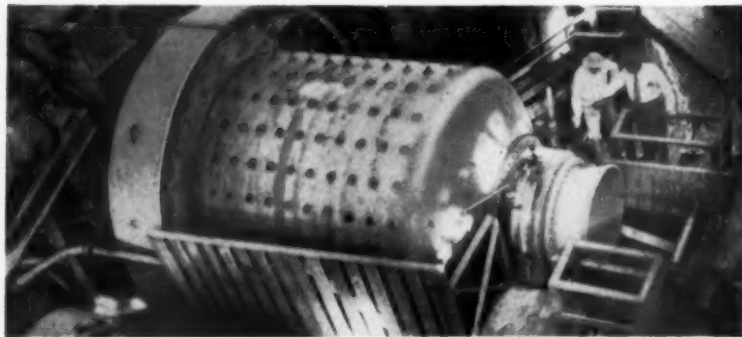
Trunnion overflow mill



End peripheral discharge mill



Center peripheral discharge mill



Exterior of 11½' x 12' Hardinge Rod Mill shown above

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INDUSTRY NEWS

(Continued from page 42)

Big cavern found at Jersey quarry

A LIMESTONE CAVERN that may be the largest in New Jersey was found at Peapack, N.J., by workmen of the Peapack-Gladstone Limestone Quarry. The cavern was discovered when a dynamite blast created an opening in what was later found to be the ceiling of a chamber.

Workers gained entrance to the cavern after removing 100 tons of rubble that had fallen on the opening. They descended a 20-ft. ladder to the bottom of a passageway and discovered a large 30 x 50-ft. chamber with a 12-ft. ceiling. Cave-exploring students from Columbia, Rutgers and Lehigh universities later discovered two other rooms and 200 ft. of passageways.

Anthony J. Ferrante, owner of the quarry, said this was the third cavern found at his Peapack plant. He ordered work halted at the site of this one until its full size was known.

Mississippi Valley starts production

THE FIRST SHIPMENT from Mississippi Valley Portland Cement Co.'s new plant at Redwood, Miss., was expected to be available before the end of January. Although quarry and raw grinding operations had been in progress since October 20, the first clinker was discharged from the giant kiln on January 2.

The new plant has a rated capacity of 2,000 bbl. a day. The area of distribution will include parts of Mississippi, Louisiana, Arkansas and Tennessee. Construction of the \$5 million plant began in August, 1957.

Portland cement production

PRODUCTION OF FINISHED portland cement in November, 1958, as reported to the Bureau of Mines, totaled 28,031,000 bbl., an increase of 12 percent over November, 1957. Mill shipments in November, 1958, totaled 24,528,000 bbl., increasing 18 percent over the year-earlier figure. Stocks of 23,688,000 bbl. of finished portland cement on hand November 30, 1958, were 2 percent greater than those on hand 12 months before. Clinker production during November, 1958, totaled 27,669,000 bbl., an increase of 2 percent over the November, 1957, figure. This information was furnished by 163 plants in 37 states and Puerto Rico.

(News continued on page 46)



This new Barber-Greene Stabilization Plant is producing base materials at capacities in excess of 400 tons per hour. Write for your copy of new folder.

New, low-cost way to mix base materials at high capacity

Producing over 400 tons per hour, the new Barber-Greene Model 828 Stabilization Plant is designed to supply base materials at the low cost and high capacity required for modern road construction. These plants now operate in many areas of the United States.

The basic plant consists of the mixer unit and base frame, a conveyor to charge the mixer, and a choice of several feeding methods. Barber-Greene supplies all the necessary components for the complete plant.

Centrifugal water pump and precision meter assure correct water content for proper compaction. Twin-shaft pugmill gives fast, thorough mixing. Adjustable dam gate controls mixing time. Five cu. yd. discharge hopper with hydraulically operated clamshell gate allows operation between trucks and minimizes segregation.

Material forms its own mixing chamber, eliminating need for liner plates. Paddle tips and arms are reversible and replaceable. Gas, diesel, or electric power available.

58-6-S

Barber-Greene

AURORA, ILLINOIS, U.S.A.



CONVEYORS...LOADERS...DITCHERS...ASPHALT PAVING EQUIPMENT

ROCK PRODUCTS, March, 1959

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45

INDUSTRY NEWS

(Continued from page 44)

Permanente Cement adds truck facility

A MODERN BULK truck-loading facility has been put into operation by Permanente Cement Co. at its deep-water cement distribution plant in Long Beach, Calif. Customers may now be serviced by Permanente from either the Cushenbury producing plant at Lucerne Valley or the new Long Beach facility.

The new operation is highly automated and incorporates the latest methods of bulk cement loading. The distribution plant now receives its cement supply by rail from the Cushenbury plant for distribution by either ship, barge or truck.

American-Marietta declares regular dividends

REGULAR QUARTERLY cash dividends of \$1.25 per share on preferred shares and 25 cents per share on the common were declared by the directors of American-Marietta Co. Both dividends, the 61st consecutively declared on preferred and common shares, were payable February 2 to shareholders of record on January 20, 1959.

Sales of American-Marietta Co., which increased again for the ninth consecutive year, were estimated by management to have been in excess of \$250 for the 1958 fiscal year ended November 30. Robert E. Pflaumer, president, stated that the above-seasonal acceleration of sales during the fourth quarter continued in December, the first month of the 1959 fiscal year.

Censuses to measure industrial growth

GROWTH OF OUR industrial and distributive system over the past four years will be measured by three major censuses started January 14 by the Bureau of the Census, U. S. Department of Commerce, with the mailing of report forms to all establishments which had paid employees during 1958. These are the censuses of manufactures, mineral industries and business.

Detailed data collected in these censuses will be published for all industries and kinds of businesses by states, metropolitan areas, cities and counties, and by size of establishments. New benchmark data will thus be provided on the more important phases of production and consumption

of raw materials, their conversion into manufactured products and the ultimate distribution of the products to consumers. With the use of improved electronic computing equipment, the bureau expects to publish preliminary figures on these censuses before the end of 1959.

Report forms for the 1958 census of mineral industries were mailed to establishments operated by proprietors and contractors as well as to all estab-

Dust cleanup continues in Lehigh Valley

THE AIR POLLUTION CONTROL laws enacted in Pennsylvania's Lehigh Valley a year and a half ago touched off a construction boom that is expected to continue through 1960. Cement plants are being modernized. Dust control equipment is being installed.

Here is what the companies have been doing and plan to do to abate air pollution:

Alpha Portland Cement Co., Martins Creek, spent \$50,000 last year to completely modernize the cement rock crushing and screening operation.

Coplay Cement Mfg. Co., Coplay, is installing dust control equipment at an estimated cost of \$175,000.

Dragon Cement Co., Northampton, appropriated \$714,000 last year for dust control and allied purposes. Of that amount about \$600,000 is going for stack gas cleanup. The installations include a millroom vacuum system, three new clinker coolers, mechanical collectors, fans and steel structures. The collectors are fiberglass bag filters.

Giant Portland Cement Co., Egypt, has work underway that is estimated to cost more than \$2 million. When completed about May 1, it will eliminate much of the dust from Giant's operation. The old raw mill, which had no dust collection, will be replaced with a new closed-circuit mill.

Hercules Cement Co., Nazareth, has spent between \$16 million and \$18 million for plant modernization and had \$60,000 allocated to its 1958 dust control budget. Plant Manager David P. Griffith said a major improvement program has been underway for several years and that the dust collection phase of the installation was essentially completed in 1957.

Lehigh Portland Cement Co., Sandts Eddy—The stack gas precipitator is within acceptable limits. It was installed in 1948.

Lehigh Portland Cement Co., Fogelsville—The company appropriated \$2 million for modern dust control equipment at this plant. The voluntary allocation was made even though the township where the plant is lo-

lishments in this field which employed paid personnel in 1958. In general, the inquiries for this census are intended to yield information comparable to that collected in the last census of mineral industries, that of 1954.

The 1958 mineral industries census will involve enumeration of some 37,500 mines, quarries and oil and gas establishments. It will be closely coordinated with the statistical programs of the U. S. Bureau of Mines.

cated does not have an air pollution control ordinance.

Lone Star Cement Co., Nazareth, is within the limits of the Nazareth ordinance due to a \$15-million to \$18-million plant modernization program completed in 1957.

Nazareth Cement Co., Nazareth—A total of \$154,000 was allocated in 1958 to rebuild this plant's rock dryer dust collectors, construct a new dust-free bulk car-loading station and install a pack house vacuum system.

Penn-Dixie Cement Corp., Nazareth, Plant 4—\$208,000 has been allocated for this plant. Of this amount \$48,000 is for a coal dryer dust collector, dust-proofing quarry drill and improved collectors on kiln stacks. Another \$160,000 is for new collectors on rock dryer stacks. Penn-Dixie's plants 5 and 6 are not in the areas with air pollution control laws. Plant 5, which has fabric bag dust collectors, is considered pollution-free.

Whitehall Cement Mfg. Co., Cementon, has spent about \$6 million for modernization. A new millroom for grinding raw materials was completed in 1958 at a cost of more than \$1½ million and will be a dust-free operation. The company is completing a new pack house with steps taken to assure no dust. The 10 to 15-year program for the complete rehabilitation of the plant was started in 1955.

Universal Atlas Cement Co., Northampton, has attained dust control efficiency meeting the requirements of the borough ordinance but intends to work for greater efficiency.

Flintkote plans new lime plant

FLINTKOTE Co. has announced plans for construction of a new plant at Salt Lake City, Utah, where it will produce "Miracle Lime," its patented lime product. It is estimated that the new plant, to be built by Flintkote's United States Lime Products Div., will cost in excess of \$1 million.

(News continued on page 53)



W-9 handles 5 different jobs in 1 hour*

- Loads out a couple of 8-ton county trucks (3 minutes)
- Charges batch plant with concrete sand (5 minutes)
- Loads 20-ton tandem dump trailer (7 minutes)
- Moves and positions car shaker
- Dresses haul road from batch plant to highway

*Including travel time between jobs



"A competitive demonstration sold us on the CASE® W-9"

—says James R. Farrington, President
Ready Mixed Concrete Co., Annandale, N.J.



—and time has proved it a wise choice!

"After watching various 4-wheel-drive loaders perform on our job," says Farrington, "we chose the 1¾-cu. yd. Case W-9 Terraload'r. And now, after 7 months of operation, we know we made the right deal. The W-9 is by far the most versatile and most productive machine we've ever owned. We use it for everything, from loading trucks to spotting freight cars, yet, despite the myriad tasks it performs, we've never pushed it to its full work capacity."

Operator Wilmer Burns puts it this way: "The Case W-9 has them all beat for visibility, speed and ability to maneuver in close quarters. Its break-out force is terrific, yet it's so perfectly balanced, that it handles easily as a baby carriage. I've operated a lot of machines, but I've never seen such a work hog as the W-9. It's tops!"

Save up to \$900... Act now!

With all its advanced engineering features, the Case W-9 is still priced up to \$900 lower than competitive units in its class. But don't delay. Contact your nearby Case Industrial Dealer today. Let him prove with a free demonstration how this high-speed, 1¾-cu. yd. Terraload'r can handle your jobs quicker, easier and at far less cost per yard.

CASE®

J. I. CASE CO., RACINE, WIS.

World's most advanced line of wheel and crawler machines for earthmoving and materials handling

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Company

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City State



C-TL-251



MACKS...for every



MACK MODEL LRX 15-TON DUMPER

Extra trips per shift are won by Mack Model LRX's jack-rabbit agility in starting, turning and backing with capacity loads aboard. Built to shrug off the relentless pounding of big-yardage shovels, LRX is a hustler over the flat or up steep grades. LRX is loaded with features for top performance and economy: Mack or Cummins diesel engines up to 220 hp... powerful air brakes for steep descents... Mack ten-speed transmission... Planidrive rear-axle assembly.

CONDENSED SPECIFICATIONS

PAYLOADS: Rear dumper, 15 tons.

DIESEL ENGINES: 170 hp, naturally-aspirated Mack Thermodyne; 220 hp, naturally-aspirated Cummins; 205 hp, turbocharged Mack Thermodyne.

TRANSMISSION: Mack, selective, constant-mesh, 10 speeds forward, 2 reverse.

CLUTCHES: Mack single-plate, 253 sq. in. engagement (for 170 hp Mack Thermodyne); Mack two-plate, 416 sq. in. engagement (for other sizes).

FRONT AXLE: Mack, heavy-duty, drop-forged I-beam.

REAR AXLE: Mack Planidrive, with final reduction through planetary gear train within wheel hubs.

BRAKES: Full air, with 7½ cu. ft. compressor.

FRAME: Wide flange, rolled section I-beam.

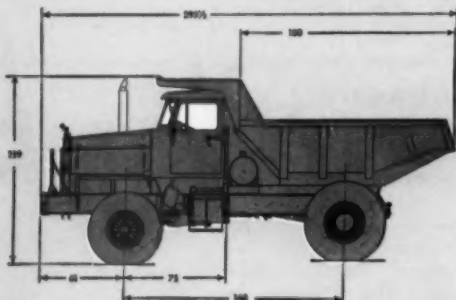
SPRINGS: Front, semi-elliptic with Rubber Shock Insulator suspension; rear, progressive-rate semi-elliptic with cam face slipper ends and radius rod.

TIRES: Standard: Front, 12.00-24 (16P) rib; rear, 14.00-24 (18P) lug. Optional: Front, 13.00-24 (18P) rib; rear, 16.00-25 (20P) lug.

WHEELS: Cast, spoked.

STEERING: 60' turning circle diameter.

DUMP HOIST: Twin, double-acting, 8" cylinders providing 70° dumping angle.



MACK MODEL LVX 22½-TON DUMPER

Built to pit power and strength against slam-bang job sites, Mack LVX sticks to the job for years of sustained, like-new performance. Rugged power-train offers a 300 or 335 hp diesel engine, Mack overgeared transmission (with two-speed compound or torque converter), and Mack Planidrive rear axle. For smooth, swift maneuverability it's in a class by itself—thanks to ideal power steering system, air-assisted clutch, and offset cab for maximum visibility front and rear.

CONDENSED SPECIFICATIONS

PAYLOADS: Rear dumper, 22½ tons.

DIESEL ENGINES: 320 hp, supercharged Cummins; 335 hp turbocharged Cummins.

TRANSMISSIONS: Mack, selective, constant mesh, 8 speeds forward, 2 reverse; converter and Mack 4-speed transmission; Torqmatic converter and transmission.

CLUTCH: Mack two-plate, air-assist with manual actuation.

FRONT AXLE: Mack, heavy-duty, drop-forged I-beam.

REAR AXLE: Mack Planidrive, with final reduction through planetary gears within wheel hubs.

BRAKES: Full air, with 12 cu. ft. compressor.

FRAME: Alloy-steel, wide flange I-beam.

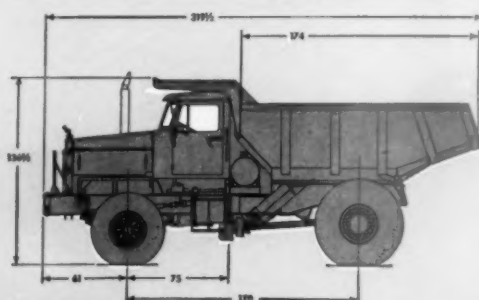
SPRINGS: Front, semi-elliptic with Rubber Shock Insulator suspension; rear, progressive-rate semi-elliptic with cam face slipper ends and radius rod.

TIRES: Front, 14.00-24 (16P) rib or 14.00-24 (20P) rib; rear, 18.00-25 (24P) lug.

WHEELS: Cast, spoked.

STEERING: Hydraulic power-steering, 62' turning circle diameter.

DUMP HOIST: Twin, double-acting, out-board-mounted, three-section telescopic cylinder assembly, providing 70° dumping angle.



EXCAVATING...FILLING...EQUIPMENT HAULING...AGGREGATE AND

construction job...rugged or routine

Only MACKS offer all these profit-power features

Quality that can't be measured by specifications. "Specs" only tell half the Mack story. Mack on-the-job records tell the rest. For over half a century, Macks have out-earned, outworked and outlasted any other make of truck on demanding jobs. That's because every Mack starts with the most advanced design and the most durable materials... is built to the highest standards of strength and precision... is tested through every stage of construction.

Trucks and tractors for every construction job. As dumpers, mixers, tractors or platform trucks, dependable, economical Macks are engineered right for every important construction task.

Widest choice of engines. Mack offers a complete range of proved truck engines: Mack gasoline engines at 150 hp... Mack Thermodyne® diesel, Mack gasoline or stock diesel engines from 170 to 450 hp.

Super-capacity and all-wheel-drive models. For capacities up to 40 tons where maximum flotation is required; a full line of tandem rear-axle Macks is available. For utmost traction, Mack front-wheel-drive assemblies offer you four wheelers with four-wheel drive and six wheelers with six-wheel drive—models that can move heavy loads over any surface that will support a truck.

Parts and service wherever you operate. Mack owners everywhere have complete parts-and-service coverage. Your nearby Mack branch or distributor carries nearly any part you'll need on the job... and behind them are Mack parts depots that can ship out any replacement part at a moment's notice.

For capacities of 30 tons or more where maximum flotation is required, a full line of tandem rear axle Macks is available.



MACK B-80 SERIES TRUCKS and TRACTORS

Here's Mack profit-power personified! There are B-80 tractors for heavy-duty hauling of platform or dump trailers... B-80 truck chassis for dumper, mixer or utility service. B-80's are powered with 170 to 232 hp Mack gasoline or diesel engines, or with Cummins diesels from 220 to 320 hp. Choice of Mack transmissions up to 20-speed Quadruplex. Powerful, rugged braking power. Available in four- or six-wheel models including six-wheel-drive units. Option of power steering.

CONDENSED SPECIFICATIONS

PAYLOADS: Rear dumper, 7 to 13 cubic yards or as mixers, 7½ to 8½ cubic yards (larger dumpers or mixers may require special provision).

ENGINES: Gasoline: Mack Thermodyne, 232 hp. Diesel: Mack Thermodyne, 170 hp; 205 hp, with turbocharger. Cummins, 220 hp; 320 hp with supercharger.

TRANSMISSIONS: Mack: Five-speed, direct or overgeared. Ten-speed (two-lever) Duplex. Twenty-speed Quadruplex. Availability contingent upon chassis models.

FRONT AXLE: Mack, heavy-duty, drop-

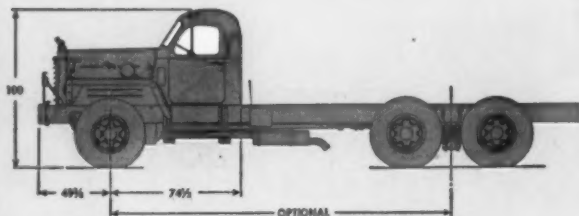
forged I-beam. Mack, front-wheel-drive, for 6x6 chassis.

REAR AXLES: Four-wheelers: Mack Dual Reduction, with radius rods and torque arms. Six-wheelers: Mack Balanced Bogie, Dual Reduction, through-drive, inter-axle Mack Power Divider.

FRAME: Channel: Alloy-steel, heat-treated; channel reinforcement, standard.

TIRES: Available sizes and types: 11.00-24, 12.00-24 (Four-wheeler); 11.00-22, 11.00-24, 12.00-24 (Six-wheeler). Size availability contingent upon bogie.

STEERING: Hydraulic power-steering (optional extra).



MATERIALS HAULING...CONCRETE, DRY-MIX AND ASPHALT HAULING

MACKS...stock or custom



MACK B-60 SERIES TRUCKS and TRACTORS

As dumpers, mixers, tractors and platform trucks, Mack B-60's have hung up records for economy on every kind of job. The "workhorse of the industry," they're powered with Mack Thermodyne gasoline or diesel engines from 170 to 205 hp. Four- and six-wheelers. Six-wheel models feature the exclusive Mack Balanced Bogie with Power Divider for non-spin traction through mud, loose gravel or sand. Longest mileage life in its class.

CONDENSED SPECIFICATIONS

PAYLOADS: Rear dumper, 6 to 12 cubic yards or as mixers, $5\frac{1}{2}$ to $7\frac{1}{2}$ cubic yards (with options).

ENGINES: Gasoline: Mack Thermodyne, 185 hp. Diesel: Mack Thermodyne, 170 hp; 205 hp with turbocharger.

TRANSMISSIONS: Mack: Five-speed, direct. Ten-speed (two-lever) Duplex. Twenty-speed Quadruplex. Ten- and twenty-speeds both on- and off-highway types. Availability contingent upon chassis models.

FRONT AXLES: Mack, heavy-duty, drop-forged I-beam. Three available sizes.

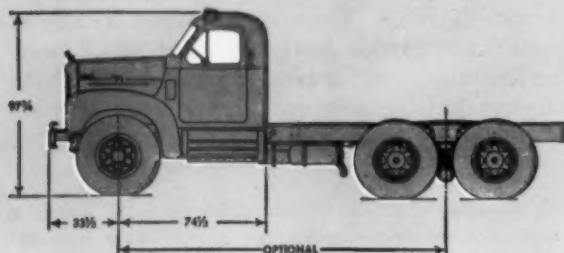
REAR AXLES: Four-wheelers: Mack Dual Reduction—with radius rods and torque

arms. Six-wheelers: Mack Balanced Bogie, Dual Reduction, through-drive, inter-axle Mack Power Divider. Three bogie sizes available.

FRAME: Channel: Alloy-steel, heat-treated, pressed; channel reinforcements for maximum services (standard or optional extra).

TIRES: Available sizes and types: 11.00-24, 12.00-24 (Four-wheeler). 10.00-20, 10.00-22, 11.00-20, 11.00-22, 11.00-24 (Six-wheeler). Size availability contingent upon bogies required.

STEERING: Hydraulic-power type (optional extra).



MACK B-40 SERIES TRUCKS and TRACTORS

With big-truck capacity and stamina . . . with small-truck agility and economy . . . Mack B-40's are always in demand as dumpers, tractors, mixers and platform trucks. Mack Magnadyne gasoline engines develop 150 hp at low, life-prolonging engine speeds. Mack transmissions up to 20-speed "Quada." Four-wheel models and six-wheelers with Balanced Bogie with Power Divider. All-wheel-drive models, as well. Like all Macks, B-40's are engineered, built and tested with one objective: sure-fire performance on rugged jobs over long periods of time.

CONDENSED SPECIFICATIONS

PAYLOADS: Rear dumper, 5 to 10 cubic yards or as mixers, $5\frac{1}{2}$ to 6 cubic yards (with options).

ENGINE: Gasoline: Mack Magnadyne, 150 hp.

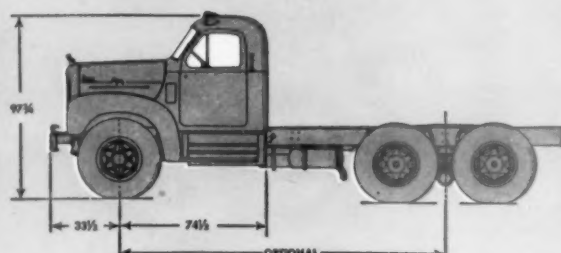
TRANSMISSIONS: Mack: Five-speed, direct. Ten-speed two-lever Duplex. Twenty-speed Quadruplex. Ten- and twenty-speed, both on- and off-highway types. Availability contingent upon chassis models.

FRONT AXLES: Mack, heavy-duty, drop-forged I-beam. Four sizes. Mack, front-wheel drive (for 6x6 chassis).

REAR AXLES: Four-wheelers: Mack Dual Reduction. Six-wheeler Bogie: Mack Balanced Bogie, Dual Reduction, through-drive, inter-axle Mack Power Divider. **FRAME:** Channel: Alloy-steel, heat-treated, pressed; appropriate inside-channel reinforcement (standard or optional extra).

TIRES: Available sizes and types: 10.00-20, 11.00-20, 11.00-22 (Four-wheeler). 8.25-20, 9.00-20, 10.00-20, 10.00-22, 11.00-20 (Six-wheeler). Availability contingent upon chassis.

STEERING: Hydraulic power-steering (optional extra).



EXCAVATING . . . FILLING . . . EQUIPMENT HAULING . . . AGGREGATE AND

built...for your specific job

Here's how **MACK** custom assembles the truck to fit your job

Mack builds every major component in a wide range of capacities ranging through super-duty. So—

Whatever kind of operation you have... whatever loads you haul... whatever problems you face by way of terrain, climate or grades... we can select the interchangeable, Mack-built components that meet these conditions and custom assemble them into the most efficient truck you can buy. (Stock models available too, of course.)

And only Mack offers quality features like these—

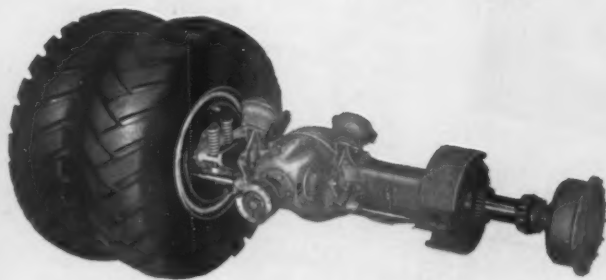
THE STRENGTH OF MACK-BUILT FRONT AXLES

Mack's drop-forged I-beam front axles are made super strong for long, trouble-free service. Extensive use of heat-treated steels for crucial parts means minimum maintenance. And Mack's exclusive front-drive axle for all-wheel-drive trucks offer the greatest ground clearance and strength of any made—with all parts fully enclosed.



THE DURABILITY OF MACK-BUILT 2-WHEEL REAR AXLES

Mack's two-wheel, rear-axle assemblies have an unmatched reputation for service under strenuous conditions. Dual Reduction, gear-type differential and Mack's famous planetary gear reduction at the wheel hubs (Planidrive) provide the smooth distribution of power vital to top truck performance.



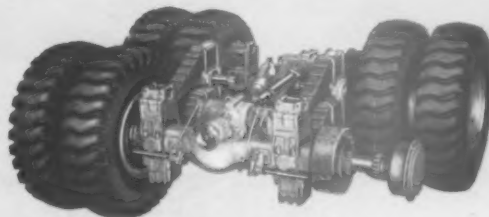
THE LONG LIFE OF MACK-BUILT TRANSMISSIONS

Service records prove that Mack transmissions—like this 20-speed Quadruplex—stand up to heavy-duty hauling far longer and need less attention than any others—thanks to the use of the finest gear metals known... to painstaking precision manufacture... and to exclusive Tetrapoid gear design that gives maximum strength, longer life and smoother action. Five- to twenty-speed units, each with ideal ratio steps.



THE TRACTION OF MACK-BUILT BALANCED BOGIES

Macks perform where other trucks bog down—in mud, loose gravel or sand—thanks to Mack's exclusive Balanced Bogie with Power Divider. It's a 4-wheel-drive, tandem rear-axle assembly with an inter-axle differential that directs the most power to the wheels having greater traction. Planidrive final reduction in all four hubs eliminates the need for bulky carriers, differentials or axle shafts. Clearance is increased, weight is reduced, maintenance is fast and simple.



MACK first name for **TRUCKS**

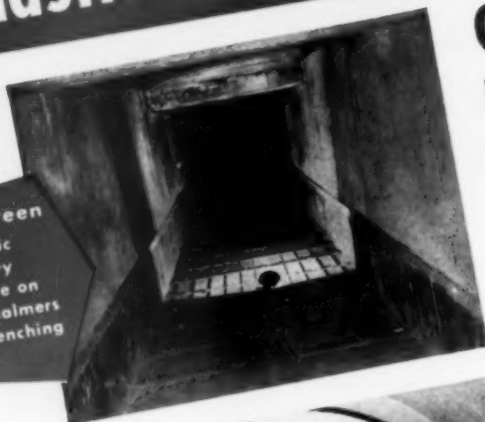
Mack Trucks, Inc., Plainfield, New Jersey • In Canada: Mack Trucks of Canada, Ltd.

MATERIALS HAULING...CONCRETE, DRY-MIX AND ASPHALT HAULING

A. P. GREEN Plastic and Castable Refractories

**Give Longer Service . . .
Lower Maintenance Costs
In Kiln Hoods, Coolers
and Dust Collectors**

**A. P. Green
Monolithic
Refractory
Enclosure on
Allis-Chalmers
Air Quenching
Cooler**



**A. P. Green
Monolithic
Hood in
Modern
Cement Plant**



**A. P. Green
Monolithic
Enclosure of Dust
Collector Housing**



A. P. Green Plastic and Castable Refractories form a one-piece, monolithic, air-tight refractory lining. There are no joints for dust to penetrate, bulging is eliminated, and structural strength is increased. No special shapes are required.

The use of A. P. Green Monolithic Construction is finding wide acceptance in all types of patented coolers. Both monolithic side walls and arches on patented cooler enclosures are setting new standards. They offer ease of installation, provision for positive and free floating anchorage, and joint-free surfaces to resist dust penetration and failure due to bulging and buckling.

In kiln hoods, coolers, and dust collectors of some of today's most modern cement and lime plants, the real and definite advantages of monolithic construction provide longer service, reduced maintenance costs, and higher thermal efficiency. Your A. P. Green representative will show you how you, too, can enjoy these money-saving advantages.

A. P. Green offers a complete line of refractory products for the cement and lime industry. Whatever your requirement, for specific recommendations without obligation, contact your local A. P. Green distributor . . . he's listed in the yellow pages of your telephone directory.

**A. P. GREEN FIRE BRICK COMPANY
MEXICO, MISSOURI, U.S.A.**

PLANTS: Mexico, Mo. • Woodbridge, N. J. • Sulphur Springs, Texas • Jackson, Oak Hill, South Webster, Ohio • Philadelphia, Pa. • Troy, Idaho • Pueblo, Colo. • Macon, Ga. • Climax, Pa.

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**A. P. Green
REFRACTORY
PRODUCTS**



DISTRIBUTORS IN THE PRINCIPAL CITIES OF THE WORLD
Enter 1220 on Reader Card

INDUSTRY NEWS

(Continued from page 46)

U. S. Gypsum Co. to open deep mine

THE U. S. GYPSUM Co. plans to open a vein of gypsum some 600 ft. below the surface near Sperry, Iowa. Mine shaft construction was expected to start about January 1, 1959, to be completed about March 15.

The \$5-million plant will include two main buildings, a kettle mill and packing and board plant, as well as office buildings, three pump houses, gate and hoist houses and oil storage sheds. It will be the firm's fourth mid-western plant.

American to show drop in 1958 profits

EARNINGS OF AMERICAN Cement Corp. for 1958 amounted to about \$6,750,000, or around \$1.55 a common share, J. H. Asmann, vice president and treasurer, told *The Wall Street Journal*. This represented the first year of operation for the concern, which was formed in late 1957 by a three-way merger of Hercules Cement Co., Philadelphia; Riverside Cement Co., Los Angeles, and Peerless Cement Co., Detroit. The consolidation took effect at the close of business December 31, 1957. The three companies on a combined basis had net of \$8,448,919, or \$1.97 a share, in 1957. The 1958 figures, termed "purely an estimate," thus represent a decline from the previous year, largely reflecting lower billings.

New sand plant opens in South Carolina

WHITEHEAD BROTHERS Co. formally opened its industrial sand plant near Blaney, S. C., December 11. The plant, which produces finely graded sand for foundries and for other industrial uses, is said to be the first operation of its kind in the state.

The public was invited to visit the plant on the day of its opening. The plant is located on a 1,200-acre tract off U. S. Highway 1 about 3½ miles east of Blaney. It has two major sections, a washing and sizing plant and a drying plant. Warehouse and office buildings and four large storage silos bring the total investment to about \$500,000.

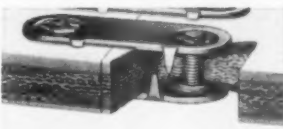
Capacity of the washing plant is 50 tph.; of the drying plant, 30 tph. Products include four basic grades of sands which can be blended to fit a great variety of customer specifications.

(News continued on page 54)

ANOTHER FLEXCO SPLICE DOING A DEPENDABLE JOB AT MATERIAL SERVICE CORP.



Picture courtesy of Material Service Corp., Yard #15, Lockport, Ill.



Cutaway of a Flexco application showing compression plates, teeth and precision-made bolts and nuts.

Belt maintenance crews like to work with Flexco fasteners because they are easy to apply — joints last a long time — worn plates can be replaced quickly — ideal for repairing rips and tears.

PROTECT YOUR INVESTMENT IN CONVEYOR BELTS

WITH FLEXCO . . . The quality fastener for all heavy-duty conveyor belt applications: SAND & GRAVEL, CRUSHED ROCK, COAL & METALS, CONSTRUCTION EQUIPMENT, etc.

Available in Steel, Monel, Stainless, Everdur. Also Promal top plates.

NEW "25-PAK"



"25-PAK" contains enough fasteners to join common belt widths.

ORDER FROM YOUR DISTRIBUTOR, OR WRITE TO US FOR BULLETIN F-112.

"FOR THE SPLICE OF A LIFETIME"

Flexible **STEEL LACING COMPANY**

4684 LEXINGTON STREET

CHICAGO 44, ILLINOIS

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ROCK PRODUCTS, March, 1959

HEADQUARTERS FOR YOUR BEST BUYS IN USED EQUIPMENT!

Your Caterpillar Dealer's lot holds the best selection of used earthmoving equipment buys on the market. Here's why: His business is active—and he reconditions, classifies and guarantees his trade-ins so you *know* what you're getting. Here's how:



1 A "BONDED BUY" on used Cat-built equipment is your safest buy. It's a bonded guarantee, up to \$10,000 of satisfactory performance on *all* parts during the guarantee period.

2 A "CERTIFIED BUY" covers units of any make in good condition. This type of protection carries your dealer's written guarantee of satisfactory performance.

3 A "BUY AND TRY" deal is just what its name implies. This protects you with your dealer's written money-back agreement.

Only Caterpillar Dealers offer this protection. You'll find your dealer listed in the Yellow Pages. For your best buys in used equipment, visit his lot today!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR

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**BEST BUYS IN NEW
AND USED EQUIPMENT**

Enter 1210 on Reader Card

INDUSTRY NEWS

(Continued from page 53)

Peerless establishes new planning section

A BUSINESS AND ECONOMIC research section has been established by Peerless Cement Co. with Gerard A. Gauthier as director. The new section will deal with company planning, business and market forecasting, budgeting and special management studies.

Peruvian cement plant in full production

COMPANIA DE CEMENTO ANDINO, S. A., which had been operating at 25 percent of capacity, officially inaugurated on November 30, 1958, its new cement plant at Condorcocha, province of Tarma, Peru. The plant is reported to be operating at full capacity, estimated at 700 bags of cement daily. It produces ASTM-1 portland cement. The plant is equipped with MIAG machinery manufactured in Germany.

The new plant, Peru's fifth, increases the country's annual capacity to about 6.3 million bbl. The total consumption of cement in Peru during 1957 was estimated at 3.5 million bbl. Of this amount, about 250,000 bbl. were imported from Germany, Colombia, the United States, Czechoslovakia, England and Sweden. The four cement companies producing in Peru in 1957 operated at slightly over 50 percent of capacity.

Alpha's 3rd quarter improved over 1957

THE THIRD QUARTER INCOME OF Alpha Portland Cement Co. was a "substantial improvement" over the like period of 1957, President R. S. Gerstell reported. The net income for the three months ended September 30, 1958, was \$2,079,065, compared with \$1,215,376 for the same period of 1957. Net income for the nine months ended September 30, 1958, was \$3,586,022; the figure for this period of 1957 was \$4,080,104. The 1957 results have been adjusted to reflect the more favorable percentage depletion allowance in computing the estimated federal income tax liability.

Plants supply aggregate for British atom project

TWO WASHING and screening plants working for the Warmwell Sand and Gravel Pits, of Warmwell, Dorset, England, are turning out all of the

sand and gravel being used in the construction of the United Kingdom Atomic Energy Authority's experimental station at nearby Winfrith. Both plants, supplied by Frederick Parker Ltd. of Leicester, are working at full capacity producing 7,800 tons of material a week. The management estimates the plants will be kept busy by the Winfrith project for at least four years.

The first of the Warmwell plants was installed in 1949, and the second began production recently. The second plant was ordered to cope with the demand created by the Winfrith project.

An official of the Atomic Energy Authority said that the sand and gravel from Warmwell are being used for all classes of concrete, not only for the ordinary demands of general building and civil engineering work, but also for the more exacting requirements of watertight structures and reactor biological shields, where high mass density and homogeneity in the concrete wall are most important.

The establishment at Winfrith is being planned initially as an experimental station concerned with nuclear reactors in the pre-prototype stage, including pilot assemblies and associated laboratory and workshop activity.

Lehigh's third quarter sets new company records

JOSEPH S. YOUNG, president of Lehigh Portland Cement Co., reported that the third quarter of 1958 established new company records both for volume of cement shipped and dollar value of sales in a single calendar quarter. He also said that operating costs at Lehigh's newer and enlarged plants are showing a very favorable trend as compared with the company's older installations.

Earnings for the period were reported as \$3,054,529, compared with \$1,856,773 in 1957. (The 1957 earnings were restated to reflect a reduction in estimated taxes payable.) Earnings for the first nine months of 1958 were \$6,663,634, down from \$7,100,513 in the like period of 1957.

Brothers acquire sand and gravel plant

TWO BROTHERS from Brooklyn, Iowa, J. G. and Clair Manatt, have purchased the Flint Crushed Gravel plant at Tama, Iowa, and have changed the name of the firm to Manatt Sand and Gravel. Riley Head of Toledo, Iowa, continues as superintendent.

(News continued on page 56)



PROJECT PAYDIRT *pays off for you again*

NEW Caterpillar No. 933 Series F Traxcavator delivers up to 22% more production

The new Caterpillar No. 933 Series F Traxcavator with a larger, $1\frac{1}{8}$ cu. yd. bucket is ready now to set new production records. It is the latest achievement of Caterpillar's "Project Paydirt*."

Field tests on a variety of jobs and working conditions proved the new Series F delivers up to 22 per cent more production than previous models of this popular machine.

The power source of the new No. 933 is an efficient new 52 HP Cat Diesel Engine. It features a new cylinder block, engine balancer for smooth performance, unit-serviced fuel pump, and a side-mounted starting engine for compactness and economy.

A new transmission and a heavier final drive give the new No. 933 the speed and stamina to maintain quick, easy loading and faster cycling. Cycle time is further shortened by a high-speed reverse—3.67 MPH.

The new machine features greater operator comfort and efficiency. All controls are conveniently visible. Leg room is ample. The mechanical advantage of the steering clutch brakes has been increased 30% for easier operation. A new, larger seat is more comfortable, continues to provide good visibility, both front and back.

And the new No. 933 retains the superior design features that have made Traxcavators first choice on jobs throughout the world. The exclusive oil clutch, automatic bucket controls, 40° tilt-back, heavy-duty undercarriage, unit design and construction — to name just a few. And the exclusive Side Dump Bucket is available to add versatility.

Get the complete story on the new No. 933 from your Caterpillar Dealer. Ask him to demonstrate how this Traxcavator can step up production on your job.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.



HIGHER PRODUCTION and more profits are possible with the new Caterpillar No. 933 Series F Traxcavator featuring a $1\frac{1}{8}$ cu. yd. bucket.

*** PROJECT PAYDIRT:** Caterpillar's multi-million-dollar research and development program — to meet the continuing challenge of the greatest construction era in history with the most productive earthmoving machines ever developed.

CATERPILLAR

Caterpillar, Cat and Traxcavator are Registered Trademarks of Caterpillar Tractor Co.

**BORN OF RESEARCH
PROVED IN THE FIELD**

INDUSTRY NEWS

(Continued from page 54)

Boat to be converted to cement self-unloader

THE STEAMER *E. C. Collins* is being converted to a cement self-unloader for the Huron Portland Cement Co. The contract for the conversion was awarded to the Christy Corp., Sturgeon Bay, Wis. This unloader will be an exact duplicate of the self-unloader the Christy Corp. installed in the steamer *E. M. Ford* in 1956.

American-Marietta Co. reports record year

SALES, NET INCOME and cash flow from earnings of American-Marietta Co. for the year ended November 30, 1958, exceeded all previous records. Net sales for the 1958 year passed the $\frac{3}{4}$ billion mark to reach \$251,417,000—an increase of 7.4 percent over sales of \$234,038,408 for the prior year. Net income in 1958 rose to an all-time high of \$17,581,005, compared with net income of \$17,182,701 reported for the 1957 fiscal year.

Canadian producers vie for cement markets

A STIFF BATTLE is shaping up for cement markets in Canada, *The Financial Post* reports. Cement capacity has shown "sensational" expansion, and there is talk of even more growth.

One strong rumor is that a \$15-million plant will be erected on the South Shore opposite Montreal. Prominently mentioned is Sogemines Ltd., which controls Inland Cement Co., has a substantial interest in Lafarge Cement of North America and owns a big tract of industrial land near the St. Lawrence Seaway development. Although officials of Sogemines say they have no plans to extend their cement operations to the Montreal area, it is understood surveys of the market potential were undertaken by the Lafarge group some time ago.

Lafarge Cement's \$14-million plant on Lulu Island near Vancouver came into production in May with annual capacity of 1.5 million bbl., increased from 1.2 million during construction because markets were developing faster than expected.

Total installed capacity in Canada now is some 40 million bbl., up from 17 million in 1950 and 26 million in 1955. Giant of the industry is still Canada Cement Co. Its \$100-million postwar expansion program has more than doubled capacity to a level of 24 million bbl.

Recent new capacity in Canada includes the St. Lawrence Cement Co. plant at Clarkson, Ont. (4 million bbl.), the Lake Ontario Portland Cement Co. plant at Picton, Ont. (1.5 million bbl.), and the B. C. Cement Co. expansion (1.5 million bbl.) at Bamberton, B.C.

Calaveras introduces expendable pallets



EXPENDABLE PALLETS for shipping sack cement have been introduced by Calaveras Cement Co. after tests in the field. Developed by the San Francisco company's own staff, the new pallets are expected to be used in shipping by other industries as well as the cement industry.

The company has applied for patents and is planning to distribute the pallets through its recently organized subsidiary, Calco Supply Co.

Extremely light in construction, the 5-lb. pallets are made of wood-reinforced corrugated paper board. Carrying 31 to 36 sacks of cement weighing 94 lb. each, they are recommended for stacking 3 high. Bottom pallet thus carries a maximum load of more than five tons.

Mel J. London, Calaveras vice president in charge of marketing, announced that the company will provide the pallets without charge on all shipments of sack cement.

Gypsum production

DOMESTIC MINE PRODUCTION of crude gypsum during the third quarter of 1958 rose to 2,680,244 tons—5 percent greater than the tonnage reported for the corresponding period of 1957—but imports dropped 21 percent. As reported to the Bureau of Mines, calcined gypsum output was 7 percent higher.

Sales of uncalcined products increased 15 percent over the preceding third quarter, the largest tonnage gain being in portland cement retarder. Industrial and building plasters declined 13 and 51 percent respectively. Quan-

tity-wise, the highest losses occurred in sales of roof deck, sanded and premixed perlite and base-coat plasters.

Gypsum board products soared to a higher point than in any previous third quarter and almost equaled the record set in the second quarter of 1956. The total output of 2.1 billion sq. ft. was up 12 percent from the third quarter of 1957. Wallboard and sheathing accounted for most of this increase.

U. S. Borax had record sales in fiscal '58

U. S. BORAX & Chemical Corp. reported record sales for its fiscal year ended September 30, though earnings declined to less than half the previous year's results. The company reported net income of \$2,370,314, equal to 41 cents a common share after preferred dividends, on sales of \$53,057,764. For the 1957 fiscal year the company showed net of \$5,470,931, equal to \$1.15 a common share, on sales of \$50,987,907.

Start-up problems and "considerable added expense" associated with new plants at Boron, Calif., and lower sales and prices for potash used in fertilizers were given in the annual report as the main causes for the decline in income.

Ernst Gravel Co. buys firm's assets

EXTENSIVE GRAVEL DEPOSITS, production and processing equipment and other assets of Fenton Construction Co., Troy, Ohio, were purchased by Ernst Gravel Co. of Piqua, Ohio.

Flintkote Co. has high hopes

THE YEAR 1959 will be the fore-runner of a decade of unprecedented prosperity for the American economy and particularly for the building materials industry, according to I. J. Harvey, Jr., chairman of the board of the Flintkote Co.

In a year-end statement, Mr. Harvey based his optimism on expectations of a "great upsurge in new family formations in the early 60's." "In 1959 alone, a 13 percent increase in outlays for new dwelling unit construction is foreseen," he said. "The huge total of \$52 billion is expected to be spent on new construction of all kinds in the coming year."

Mr. Harvey said that Flintkote will continue to look at new expansion and diversification possibilities.

(News continued on page 60)



Want lowest cost per ton?



CEDARAPIDS HAMMERMILLS combine an impact breaking and milling action which results in the uniform cubical-shaped crushed stone and ag-lime that assures repeat orders. And you get the big hourly output that fills those orders at a profitable low cost per ton. A wide range of production needs can be met with three models. Get complete details from your Cedarapids Dealer. Call him today.

IOWA MANUFACTURING COMPANY
Cedar Rapids, Iowa

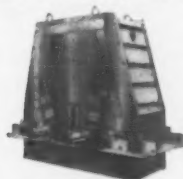
Here's why more crushed stone producers turn to CEDARAPIDS

- ✓ greater tonnages
- ✓ higher quality products
- ✓ lower production costs

● This Cedarapids-engineered Stationary Plant is designed to produce seven different sizes of high-quality crushed limestone at a 300 to 350 ton per hour rate, with 90% crushing! A Cedarapids 4033 Hammermill occupies the key position, while a 4350 Double Impeller Impact Breaker handles the primary breaking, and three 48" x 12' Horizontal Vibrating Screens grade the material to the specified sizes. That's the way one producer utilizes the high capacity, high efficiency of Cedarapids equipment to meet market demands for quality crushed stone with profitably low costs.

For profitable production in quarries all over the country, depend on Cedarapids quality-built components, fully-engineered by Cedarapids crushing and screening experts into Stationary Plants that assure greater tonnages, better quality products, and lower production costs.

CEDARAPIDS OFFERS A COMPLETE LINE OF QUALITY-BUILT, HIGH-CAPACITY COMPONENTS



DOUBLE IMPELLER IMPACT BREAKERS in six models give you whatever output you need up to 1000 tons per hour. High percentage of material broken in suspension results in high reduction ratio, low horsepower requirements.



ROLL CRUSHERS in 6 sizes with 3 types of roll shells insure high capacity of the smaller size finished products you want. Single and Twin-Jaw Primary Crushers also available in 18 sizes.



HORIZONTAL VIBRATING SCREENS provide 12½% greater screening area than inclined screens of the same size. Sizes from 3' x 8' to 60' x 16', double or triple deck.



HEAVY-DUTY FEEDERS designed to feed big crushers with a smooth, workable flow of material, and withstand the shock of heavy dumping.

Average load of 8 tons takes a Michigan 2 to 4 minutes. Rock here averages 3% zinc (crushed and concentrated for shipment to smelting plants), 3% iron, 94% limestone (crushed and sold to railroads and contractors).

Tires replace tracks for underground zinc-ore loading at Eagle-Picher mine

Production boosted 40%, repairs cut in half

In the sprawling, honeycombed caverns of a zinc mine 300 feet below ground, two rubber-tired Michigan Tractor Shovels are loading out 40% more ore than the crawler loaders they replaced—proving mobility is an asset anywhere—even below the earth's surface.

Before the rubber-tired Model 175A Michigans were put to work in this mine near Galena, Illinois (one on the day shift; the other, at night), owner Eagle-Picher Company was using crawler loaders. Two things caused the switch to rubber. One, repairs on each crawler cost more than half *each year* of the total price of the crawler new. Two, lack of loader mobility was wasting time for all dependent equipment.

Since everything that goes in or out of the mine must travel through either of two mine shafts, it costs Eagle-Picher \$500 or so just to lower, reassemble, and try out a new machine. But in this case, the company made up their "investment" in just a couple of shifts.

Save 60 minutes travel time

According to mine superintendent, Ed Houy—an 11-year veteran with Eagle-Picher—"First of all, an hour of waste time was eliminated every day. It used to take the crawlers 20 minutes to creep a mile or so from our central service area to the work site. And 20 minutes at the end of the day to come back again. The Michigans make the trip, either way, in

five minutes. So 15 minutes a trip, 30 minutes total, are saved on each of our two shifts.

Triple output on scattered loading

"Mobility also pays off in certain areas of the mine where our 8-ton trucks can't be spotted right next to the shot rock," Mr. Houy continues. "Here, loaders must carry material as much as 100 ft. The rubber-shod machines often do three times the work of crawlers in these applications. The same advantage holds true when loads must be taken in succession from different headings in order to get the desired 3% blend of zinc for processing."





One Michigan keeps 5 trucks busy

Michigan output is high on straight loading too, according to general superintendent Harold Haman. "With trucks on average one-way haul distance to the crusher of about one mile," he says, "one Michigan loads out as much as 100 tons per hour. It alone keeps five 8-ton trucks busy. Each 8 ton load takes a Michigan three passes, two to four minutes (depending upon the digging and terrain). A typical day yields 1,400 tons of rock. Previously, with crawler loading, our top output was 1,000 tons. The daily increase, 40%."

Maintenance costs 50% lower

According to Robert Haffner, manager of Eagle-Picher's Illinois-Wisconsin operations, "Michigans not only load out more rock than the crawlers, but they also have proved cheaper to operate and maintain. Cost of maintenance per ton loaded *is about half*. Majority of the few repair jobs we've had have taken less than four hours to complete. And the shot rock, so rough that steel tracks and track frames required numerous overhauls, have been comparatively easy on tires. Recapping is needed only every 1,000 hours or so.

Ownership of 4 Michigans proves satisfaction

"Before Eagle-Picher settled on Michigans, we tried other machines," continues Mr. Haffner. "After careful consideration, we decided Michigans had the sturdiness, mobility, and productive capacity we needed. We now do all loading here in Galena—and at our Wis. mine—with Michigans. Four of them. So you can see how much we like them!"

Michigan is a registered trademark of

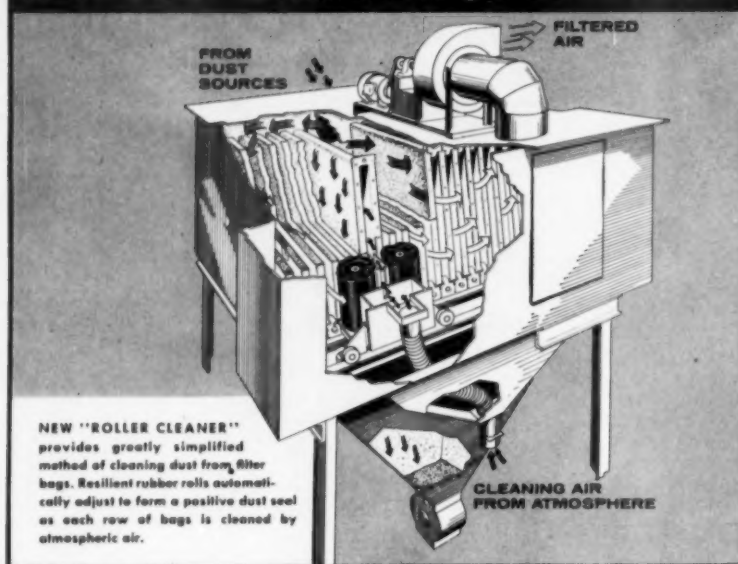
CLARK EQUIPMENT COMPANY
Construction Machinery Division

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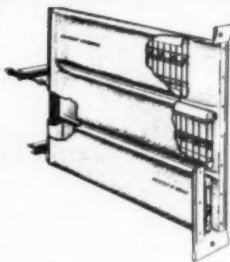
NEW SLY DYNACLONE® DUST FILTER



NEW "ROLLER CLEANER" provides greatly simplified method of cleaning dust from filter bags. Resilient rubber rolls automatically adjust to form a positive dust seal as each row of bags is cleaned by atmospheric air.

Patent Nos. 2583039, 2695681, 2867289. Other Patents Pending.

NOW! As Much As 3 TIMES LONGER FILTER BAG LIFE



NEW SLY "RESIST-O-WEAR" FILTER BAGS (patent pending) provide complete dust filtration with as much as three times longer life than conventional bags. This has been proved on the toughest field installations.

The new bag has three equal-size sections. Each pocket has two spacers, making a total of six per bag. Weight is distributed on

three seams rather than one, minimizing strain. A special protective flap on the back end prevents abrasion from incoming dust.

Now standard in the new "Roll-Clean" Dynaclone, Sly "Resist-O-Wear" bags combine with all the other superior Dynaclone features to assure greatest dust collecting efficiency with unequalled maintenance-free service.

ALL THESE FEATURES IN ONE DUST FILTER

- New "Resist-O-Wear" bags last as much as three times longer.
- Constant suction at dust sources—complete dust collection.
- Automatically self-cleaning for continuous operation.
- Free-rolling cleaner. Complete dust seal—automatic seal adjustment.
- Greater filtering capacity; smaller space requirements.
- Simplified construction for ease of inspection and servicing.

SEND FOR New Bulletin 105 and
New 36-page Dust Control Catalog 104.



THE W. W. SLY MANUFACTURING CO.

4746 TRAIN AVENUE • CLEVELAND 1, OHIO
OFFICES IN PRINCIPAL CITIES

OVERSEAS LICENSEE: ANDREW AIR CONDITIONING LTD., LONDON S.W. 1, ENGLAND

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INDUSTRY NEWS

(Continued from page 56)

Allentown Portland Cement 3rd quarter earnings up

ALLENTOWN PORTLAND CEMENT Co. reported third-quarter net earnings of \$692,137, up from \$594,703 in the same period of 1957. Net earnings for the nine months ended September 30, 1958, were \$1,587,491, down from \$1,772,772 in the first nine months of 1957.

Two cement firms sue for federal tax recovery

TWO CEMENT COMPANIES filed suit in U. S. District Court in Philadelphia against the federal government in an effort to recover income taxes which they claim were paid without taking into full account depletion allowances on calcium carbonate mines. The companies are Allentown Portland Cement Co., seeking to recover \$995,299 in taxes, and Alpha Portland Cement Co., claiming \$1,006,160.

1959 gains forecast by National Gypsum

CHAIRMAN MELVIN H. BAKER of National Gypsum Co. predicted that his company's 1959 sales will register an 11 percent increase over 1958's record sales and set a new record of about \$180 million.

Estimated 1958 sales for National Gypsum and its subsidiary, American Encaustic Tiling Co., were put at close to \$162 million. Estimated 1958 earnings were \$15,900,000. The firm's 1957 earnings were \$12,790,942 on net sales of \$141,472,977.

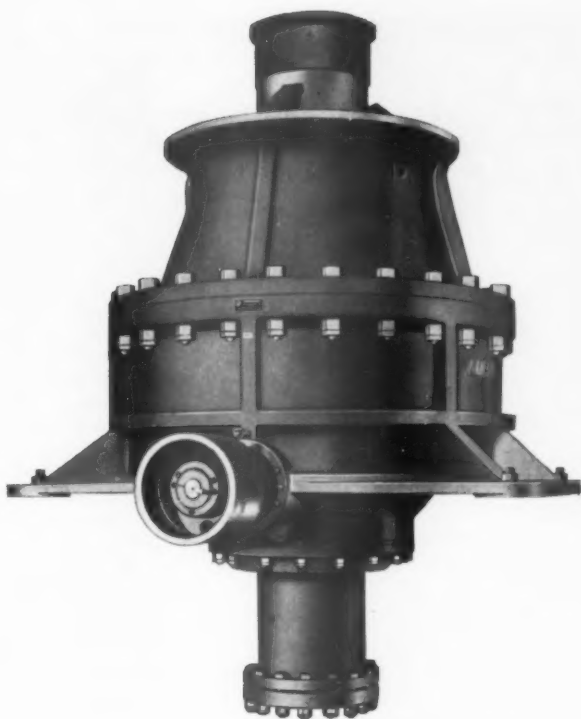
Marquette absorbs sales subsidiary

SOUTHERN STATES PORTLAND CEMENT Co., Atlanta, Ga., has been absorbed by its parent firm, Marquette Cement Mfg. Co. The Southern States offices in Atlanta remain in operation under the Marquette name.

J. O. Lane, Southern States sales manager, retired January 1. He was succeeded by John A. Morris, who will head sales of the Marquette organization in the Atlanta area.

Founded in 1902, Southern States had been a sales subsidiary of Marquette for the past five years. Mr. Lane said the changes were "in name only," and that essentially the same organization would continue to serve Southern States' customers.

(News continued on page 62)



Bonus capacity, superior quality with Hydrocone Crushers

YOU can gain extra hours of production each time you change a setting in the *Hydrocone* crusher. Just flip a switch, and in *less than a minute* the *Hydroset* mechanism raises or lowers the crushing cone for precise control of product size. Equally important, you get superior quality stone to meet rigid specifications. Crushing chamber design and choice of eccentric throws assure uniform cubical characteristics and even distribution in all mesh sizes.

Adjusts for wear, clears tramp iron and releases jams

"One-man, one-minute" operation also applies to compensating for wear on mantle and concave, and emergency unloading — just flip the switch to raise the mainshaft. In addition, you get protection against tramp iron or other uncrushable materials with an automatic reset in the hydraulic system.

To get all the details on the fastest and most efficient crusher operation, ask your A-C representative for Bulletin 07B7145B. Or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin.

Crushing Specification Stone?



Hydrocone and Hydroset are Allis-Chalmers trademarks.



A-5593

ALLIS-CHALMERS

ROCK PRODUCTS, March, 1959

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HUBER-WARCO grinders



low cost aggregate reduction

If you want low cost aggregate production, then get all the facts on the Huber-Warco No. 9 GRINDER. Quickly and efficiently, this grinder reduces cinders, pumice, slag, haydite, burned clay, shale and many other products of quarries and mines. Here are some profit-producing facts . . . capacity of 30 yards per hour . . . grinds material wet or dry . . . horsepower required is 25 h.p. . . . 150 r.p.m. speed of 48" clutch pulley . . . floor space of 12'-8"x11'-2" . . . overall height of 10'-11" . . . weight is 31,000 pounds. Suspended yoke mounted mullers are adjustable to any height, and for finer grinding, the grinding surfaces run together. The No. 9 GRINDER requires only a minimum of maintenance for continued trouble-free service. Other Huber-Warco GRINDERS range in capacity from 4 to 75 yards per hour . . . write for complete details.

A product of HUBER-WARCO COMPANY, Marion, Ohio, U. S. A.

HUBER-WARCO COMPANY, Marion, Ohio, U.S.A.

☐ Please send me specifications on the Huber-Warco No. 9 Grinder

Name

Title

Company

Address

City Zone State

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INDUSTRY NEWS

(Continued from page 60)

Pakistan cement plant gets green light

WITH ADEQUATE RAW MATERIALS for cement making available on St. Martin's Island, the government of Pakistan has approved the construction of a cement plant in East Pakistan. Scheduled for operation in 1961, the plant, located near Chittagong, will have an annual capacity of 150,000 tons. It should prove of great benefit to East Pakistan, where a chronic cement shortage has handicapped development projects. The production of the one cement plant now operating in East Pakistan meets less than one-fourth of the province's requirements.

At least 2.5 million tons of shelly limestone are estimated to be available on St. Martin's Island, which is located in the Bay of Bengal.

Firm pays entire cost of retirement program

IN THE NEW RETIREMENT program of Harry T. Campbell Sons' Corp., Towson, Md., the company pays the entire cost of providing benefits, with no cost to participating employees. The plan, which became effective January 1, represents the latest addition to the firm's comprehensive program of employee benefits.

The company engages in quarrying, contracting and manufacturing and produces a wide variety of products for the construction industry.

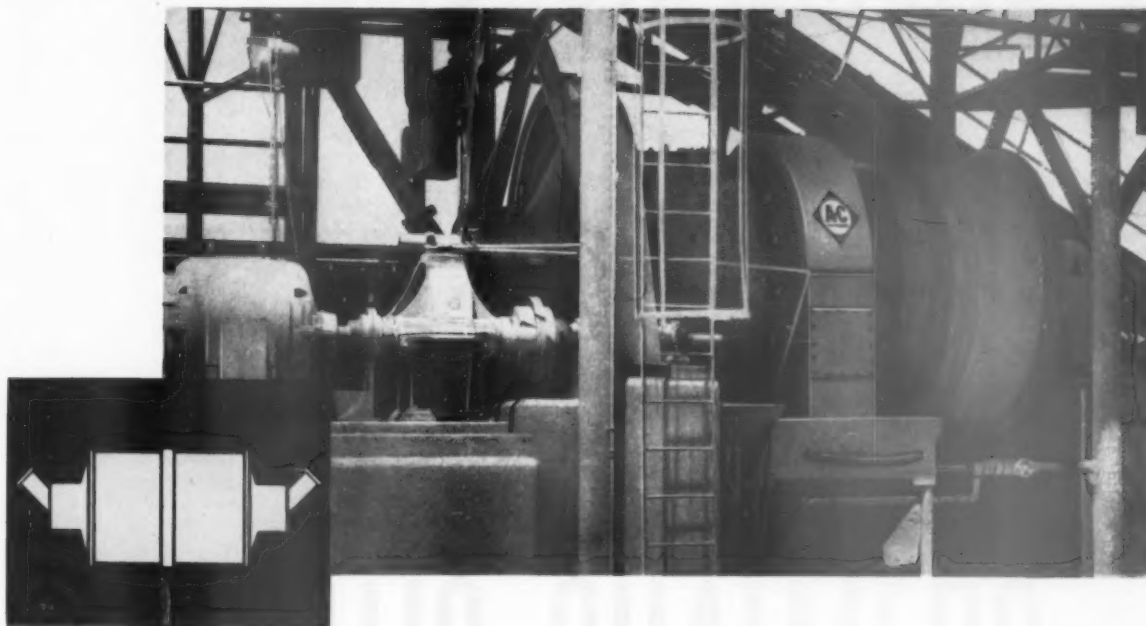
Earnings down 30 percent

THE BESSEMER LIMESTONE AND CEMENT Co. reported that earnings for the first nine months of 1958 were 30 percent less than those of the same period of 1957. Cement shipments in the 1958 period were 22 percent less than the year before, while limestone shipments were less than one-half those of the same period of 1957.

Frank B. Warren, president of the Youngstown, Ohio, firm, said an unusually rainy season in that area had hampered progress of many construction projects. Several paving projects scheduled for completion in 1958 were to be carried over into 1959.

Net income for the first nine months of 1958 was reported as \$1,544,806. Net income for the same period of 1957 was \$2,224,589. Estimated income tax for both periods was based on the newly liberalized method of calculating percentage depletion.

(News continued on page 61)



Specification Sand

from rock, aggregate or natural sand with an
ALLIS-CHALMERS ROD MILL

Here's the economical way to get specification sand, *where and when you want it*. An Allis-Chalmers rod mill will process rock, coarse aggregate or unusable natural sand into specification sand of ideal cubical texture. This equipment will extend the life of natural deposits and eliminate the expense of long-haul shipments.

Specification Reliability and Flexibility

The Allis-Chalmers rod mill holds its adjustment to specification with very little attention. Changing specifications is merely a matter of changing feed, feed-water rate, or rod charge.

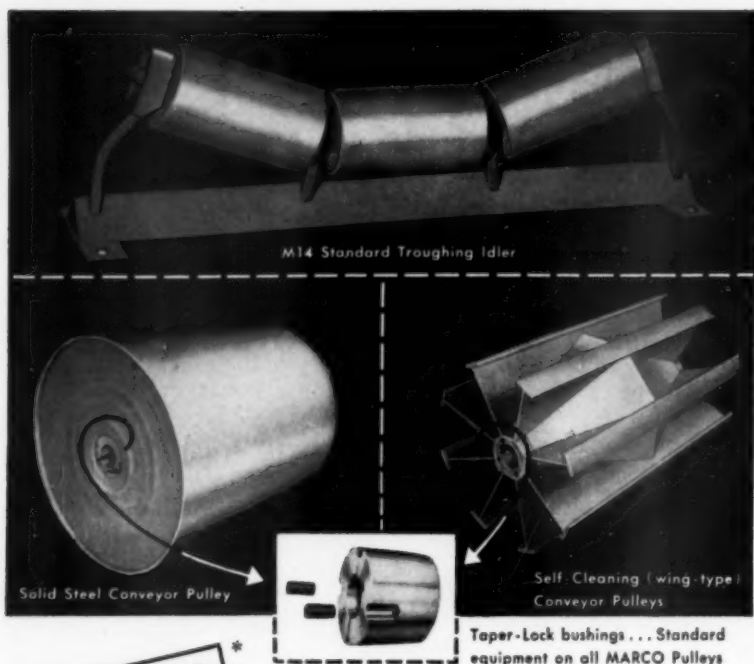
"Manufacturing" sand is a particularly tough, abrasive operation, but the Allis-Chalmers rod mill is built to withstand this rugged service. It's been proved the most economical machine for grinding sand — in terms of long life and low operating costs.

Contact your A-C man for details, or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wis., for Bulletin 07B6718A.



A-5847

ALLIS-CHALMERS



MARCO The Complete Line of Modern Conveyor Accessories...

Engineered to Reduce Your Material Handling Costs

Belt Conveyor Idlers — You'll find MARCO engineering makes a big difference in idlers. MARCO idlers are equipped with precision ground, ball bearings. These bearings are designed specifically for conveyor idlers and at 300 revolutions per minute they will carry loads up to 860 lbs. per bearing. The result, — longer service life and lower power requirements.

Each bearing is pre-lubricated and effectively sealed to eliminate field lubrication and reduce maintenance.

The frame is stronger because of its all steel construction. Material build up is kept at a minimum due to the self-shedding base.

Idlers fit any conveyor frame and are available in many types and sizes. Ask for Bulletin ID-2.

MARCO Solid Steel Pulleys — Advantages of MARCO pulleys include: machined faces and Taper-Lock bushings, at a competitive price. Both the belt and pulley last longer because the entire pulley face is

machined to insure concentricity with the bore. The Taper-Lock bushings provide the quickest, easiest way to mount or demount pulleys.

Self-Cleaning (wing-type) Pulleys — These self-cleaning pulleys pay for themselves many times in longer belt life when installed in elevator boot sections, conveyor tail sections and gravity take up assemblies. These pulleys are of all steel, jig-welded construction and also combine the advantages of machined faces and Taper-Lock bushings.

Whenever you need conveyor accessories — turn first to MARCO.

MARCO idlers and both solid steel and self-cleaning pulleys are available in a wide range of sizes for prompt delivery to meet your requirements.

You can save time, trouble and dollars because... MARCO specializes in designing and manufacturing conveyors and accessories. Get the facts from your MARCO Distributor or write E. F. Marsh Engineering Co., St. Louis 10, Mo.



Engineered MARCO* Products:

Tubular Frame Belt Conveyors • Conveyor Idlers
Solid Steel and Self-Cleaning Steel Pulleys • Bucket Elevators
Control Gates • Feeders • Bins

*Trademark Registered

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INDUSTRY NEWS

(Continued from page 62)

Bestwall Gypsum plans plant at Wilmington, Del.

BESTWALL GYPSUM CO. of Ardmore, Pa., is planning a "multimillion-dollar" gypsum board, lath and plaster plant at the Wilmington Marine Terminal, Wilmington, Del. The company made its proposal for the plant to the Board of Harbor Commissioners which operates the terminal and, if accepted by the board, Bestwall will construct the plant on land leased from the commission, the company said.

The new plant would employ about 200 production workers and would have a capacity of over 150 million sq. ft. of gypsum board and lath products a year. The plant would import up to 200,000 tons of gypsum ore a year from company-owned deposits in Nova Scotia or from the Dominican Republic.

Bestwall now operates seven plants in the U. S. and one in Canada and is building a gypsum plant at Brunswick, Ga.

Calaveras earnings

CALAVERAS CEMENT CO. reported net earnings of \$1,347,175 for the first nine months of 1958, an increase over the company's \$1,215,818 net earnings in the corresponding period of 1957. On the basis of 429,053 shares outstanding, this was equal to \$3.14 per share as against \$2.83.

Calaveras net sales rose to \$9,442,504 in the period ended September 30, 1958. They totaled \$9,187,238 in the first nine months of the preceding year. The company's earnings for the first nine months of 1957 were adjusted upward to reflect increased percentage depletion allowances permitted by court decisions.

Permanente Cement Co. increases dividend

IN VIEW OF record sales and earnings going into December, 1958, Permanente Cement Co.'s board of directors announced an increase in its dividend from 13½ cents to 17½ cents per share, payable January 31, 1959, to share owners of record January 9, 1959. On an annual basis, this would amount to 70 cents per share, compared with 54 cents per share paid during 1958.

The company expected sales of about \$64 million in 1958, compared with \$50,756,000 for the 1957 11-month fiscal year.

(News continued on page 66)



DRILL 9" HOLES WITH THE JOY 59-BH CHAMPION

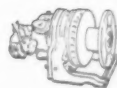
This world-famous pioneer rotary-air-blast-drill has adopted many of the features of its big brother, the Super-Heavyweight, to give you these advantages:

MORE STABLE DRILL STRING through use of round pipe . . . **BETTER AIR CIRCULATION** and cuttings removal . . . **FASTER DRILLING**—faster retraction of hydraulic feed averages total of only 3 minutes on a 51' hole . . . **EXTENDED 55' MAST** permits drilling 50' hole without adding pipe . . . **BETTER MOBILITY**—hydraulically raised and lowered mast is left assembled during long moves . . . **9" HOLE** allows wider hole spacing, economical use of large diameter powder.

This all adds up to new records in low cost per ton of rock. Get the whole story on the 59-BH. Write to **Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.** In Canada: Joy Manufacturing Company (Canada) Limited, Galt, Ontario.

Write for Bulletin 168-27

JOY . . . **EQUIPMENT FOR MINING . . . QUARRYING . . . CONSTRUCTION**



WSW M 6885-168

PORTABLE AND SEMI-PORTABLE AIR COMPRESSORS • ROCK DRILLS • WAGON DRILLS • DRILL BITS • BACKFILL TAMPERS • SPADERS
PAVING BREAKERS • SHEETING DRIVERS • DRIFTERS • PORTABLE HOISTS • FANS AND BLOWERS • PORTABLE SAFETY LIGHTING
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ROCK PRODUCTS, March, 1959

In Cement and Aggregates the Word for Air Separation is "Sturtevant"



in cement...

Sturtevant Air Separators make possible highly efficient closed-circuit systems. Large circulating loads increase output, eliminate overgrinding. Ball and lining life lengthens, power costs are lowered. Top quality cement results from precise control of finenesses. Standard 16 ft. Sturtevants deliver raw fines up to 70 tph, finished fines up to 260 bph.

in aggregates...

Sturtevant Air Separators classify sand without water, clean sand by de-dusting it. Pre-classification by air can also increase screening production by removing screen-blinding fines. In blending operations, Sturtevants select desired fines from grinder throughput. This graded product is then used to overcome fineness modulus deficiencies.

Send for Air Separator Bulletin No. 087.

STURTEVANT

MILL COMPANY
102 Clayton St., Boston, Mass.

Crushers • Grinders • Micron-Grinders • Separators
Blenders • Granulators • Conveyors • Elevators

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INDUSTRY NEWS

(Continued from page 64)

Vulcan Materials Co. acquires Gary Slag

VULCAN MATERIALS Co. has acquired Gary Slag Corp. of Gary, Ind. Vulcan is one of the nation's largest producers of building and construction materials. Charles W. Ireland, president of Vulcan, said that his firm acquired Gary Slag "in order to enable our Consumers Co. division of Chicago to better serve the trade with more items of construction material."

Ideal re-opens California plant

IDEAL CEMENT Co.'s plant at San Juan Bautista, Calif., resumed operations in January after a six-month curtailment in production. A skeleton crew of 37 employees was swelled to 107. Although the plant is still oper-

ating slightly below capacity, Jack Baxter, plant manager, hopes that the mill will be operating at full strength before the end of 1959. The plant had 144 employees when operations were cut back in June, 1958.

Gypsum, Lime and Alabastine adds warehouse, plant

GYPSUM, LIME AND ALABASTINE, CANADA, LTD., has completed a 36,500 sq. ft. warehouse at Caledonia, Ont., which brings its Caledonia warehouse and plant under one roof and provides 2½ times more storage capacity for board products at Caledonia.

The firm also began production of pulverized limestone in a new \$350,000 plant that has been added to other operations at Beachville, Ont. Production was expected to reach full capacity of 30 tph. early this year. Output is intended for the Ontario market, estimated to use 200,000 tons a year.

END

Calendar of Coming Conventions

1959

April 6-8, 1959—

National Lime Association, Annual Convention, Homestead, Hot Springs, Va.

April 23-25, 1959—

Texas Aggregates Association, 5th Joint Annual Convention With TRMCA, Shamrock Hilton Hotel, Houston

May 17-19, 1959—

Empire State Sand, Gravel and Ready Mix Association, 8th Annual Convention, Sheraton-Brock Hotel, Niagara Falls, Ontario, Canada

June 17-20, 1959—

Expanded Clay & Shale Association, Mid-Year Meeting, New York, N.Y.

June 21-26, 1959—

American Society for Testing Materials, Annual Meeting, Chalfonte-Haddon Hall, Atlantic City, N.J.

September 13-18, 1959—

American Society for Testing Materials, Third Pacific Area National Meeting, Sheraton Palace Hotel, San Francisco, Calif.

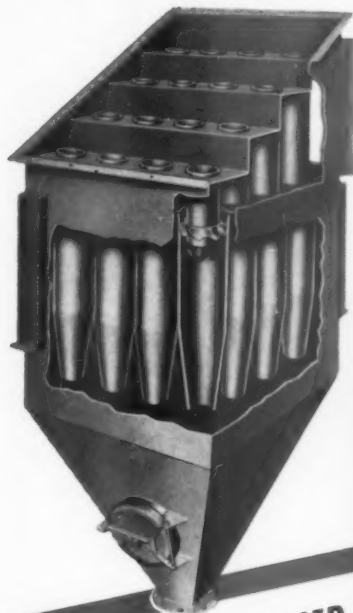
September 14-17, 1959—

American Mining Congress, Metal Mining-Industrial Minerals Convention, Denver, Colo.

September 27-30, 1959—

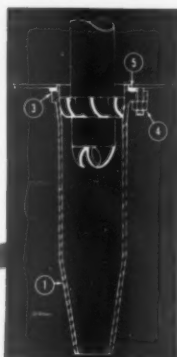
National Sand and Gravel Association, Semi-Annual Meeting, Board of Directors, Lake Placid Club, Lake Placid, N.Y.

13 BIG REASONS WHY MULTICLONE DUST COLLECTORS



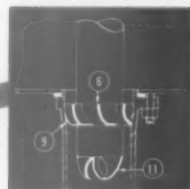
EASILY REPLACED COLLECTING TUBES

1. CAST IRON TUBES assure long wear!
2. SPECIAL ALLOY TUBES (FBA Inco #40, Chrome-hard and Ni-Hard) can be supplied where high temperatures or severe erosion are problems!
3. TUBES ARE PRECISION-CAST for exact fit into tube sheet. Tube lip protects sealing gasket!
4. TIGHT LEAKPROOF FIT of each tube is maintained indefinitely by special lock nuts!
5. GAS-TIGHT JOINT between tube sheet and each tube is assured by special gasket. Joint can be easily renewed when replacing tube!



COST LESS TO MAINTAIN... ARE FAR SIMPLER TO SERVICE!

When you buy dust collection equipment, don't stop with a comparison of initial cost only. Compare also the costs and simplicity of keeping your dust collector at top-notch efficiency *throughout the years*. To the outstanding advantages of Multiclone's unique operating features, add the low cost and easy maintenance of this equipment and you'll see why Multiclones are the leading choice wherever *centrifugal* types of dust collectors are the most practical solution.



PRECISION CAST VANES!

6. CAST IRON VANES resist erosion!
7. SPECIAL ALLOY VANES (FBA Inco #40, Chromehard and Ni-Hard) can be supplied where high temperatures or severe erosion are problems!
8. VANES ARE EASILY RENEWED by simply dropping new ones into place when changing collecting tubes!
9. EXACT FIT OF EACH VANE in the tapered collecting tube prevents erosive "blow-by"!
10. CAPACITY AND EFFICIENCY of the unit can be quickly altered by simply changing vanes. Assures easy adaptability to new operating requirements—big savings in plant modernization programs!
11. SPIROVANES (energy recovery devices) may easily be added to outlet tubes of existing installations to increase capacity or reduce pressure drop!

Plus These Important Advantages...

12. CUBIC SHAPE of Multiclone is easier to install and insulate — and requires only ONE simple inlet and outlet duct!
13. BACKED BY OVER 3300 INSTALLATIONS serving a wide cross-section of industry, each Multiclone benefits from the unequalled "know-how" gained during Western Precipitation's half-century of leadership in the highly-technical field of modern dust collection!

Compare the above advantages with any competitive equipment and you'll readily see why Multiclones are the logical choice for *your particular* operations, too. There's a Multiclone representative near you who will gladly supply further details to fit your individual requirements. No obligation, of course!

Send for descriptive literature on Multiclone equipment.



COTTRELL Electrical Precipitators
MULTICLONE Mechanical Collectors
CMP Combination Units
DUALAIRE Jet-Cleaned Filters
TURBULAIRE-DOYLE Scrubbers
HOLO-FLITE Processors
HI-TURBIANT Heaters

WESTERN PRECIPITATION CORPORATION

Engineers and Constructors of Equipment for Collection of Suspended Material from Gases . . . and Equipment for the Process Industries
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Representatives in all principal cities
Precipitation Company of Canada Ltd., 8285 Mountain Views Avenue, Montreal 9

HINTS AND HELPS

Profit-making ideas developed by operating men



Belt takeup

LONG SECTIONAL BELT CONVEYORS need belt takeups just as much as permanent belt conveyors with carefully designed takeup devices. But it takes a lot more ingenuity to make them work.

This Wisconsin sand-and-gravel producer uses sectional belts to bring his materials out of the pit. Since each flight must be moved frequently and must be mounted on temporary supports, proper tensioning of the belts was quite a problem.

A small-diameter belt pulley was mounted on an angle framework which was hinged to the lower chord of his conveyor frame. Now his belt maintains the proper tension when starting up under load and during variable load conditions. Crude, homemade, but very effective.

Pound wise, penny foolish

THERE IS SO MUCH discussion these days about saving that we are inclined to pay little attention to ways of actually doing any real saving. For example, we have known of valve users who discard old, worn valves rather than spend the time to install new parts costing only pennies.

This reminds us of the maintenance mechanic who did rework an old valve by putting in a new disc—right on top of the old one—and couldn't understand why the valve still leaked profusely. But before we become too convulsed with laughter, let's take another sharp look at our own maintenance and repair procedures.

W. F. Shophorst
Newark, N. J.

Easy belt replacement

ONE OF THE MARKS of the carefully designed cement plant is the attention of the designer to seemingly trivial detail. One of the most critical details involves the procedure for replacing heavy, bulky or awkward equipment.

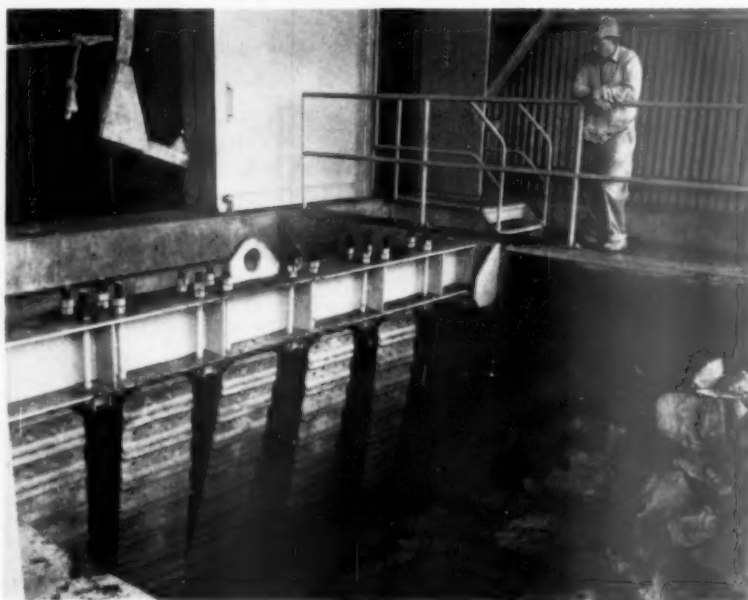
This machinery is usually put into place before the building is finished and before other big equipment blocks the way. Unless installation is carefully thought out in advance, it is possible to "lock in" big equipment which needs service or replacement, much to the frustration and irritation of the maintenance engineer.

Belt conveyor equipment seems to cause the most difficulty. Since this

equipment is relatively easy to install, little thought is usually given to the methods of replacing belts or terminal machinery. The designers of an eastern cement plant must have been aware of this problem, for they not only left doorways at the head and foot end of the huge belt conveyors, but they also provided rails for hoists which can raise or lower machinery from the ground.

These unobtrusive details will be paid for the first time they are used. It will be easy to pull out the long flights of conveyor belt without twisting them or threading them among structures; it will be a simple matter to replace shafts, bearings, pulleys or drives.

Curtain chains made of crawler treads



MOST HINTS AND HELPS, we have discovered, are the ingenious application of used or useless equipment to serve an entirely different purpose. But the designers of this plant realized that there was no better way to keep rock in the primary dump hopper from surging the primary crusher than to use crawler treads.

As a result, the curtain chains are made up of sections of new treads,

and the length of each one was specified to suit the contour of the throat of the hopper. An added feature of this design is the detail of linking the treads together with heavy coil chain to make the whole curtain act as a unit. A heavy beam supports the assembly which then can be lifted out for replacing the treads when they become worn.

(Continued on page 70)

B.F. Goodrich



Why contractor calls B.F. Goodrich tires "the best tires for the job!"

KILLIAN-HOUSE CO. constructs roads and bridges within a 100-mile radius of San Antonio, Texas. 143 pieces of rubber-tired equipment are at work, including 30 flat bed trucks, 10 scrapers, 24 dump trucks, 30 pick-ups, 12 road rollers and 12 water trucks. The company uses B.F. Goodrich tires on this fleet because, says Partner Jack House, "They are the best tires for the job."

For example: Traction Express tires average 75,000 miles of service where previous makes gave considerably less; Tractor Grader tires are being retreaded as many as 4 times; on the new Rock Service Tubeless tires above, the company estimates retreads will save them 30% over other makes.

The new B.F. Goodrich Rock Service

tire has an enormous, double-chevron tread that defies rock cuts and bruises, grips the ground for full traction in forward or reverse. Under the tread is the B.F. Goodrich FLEX-RITE NYLON cord body that withstands double the impact of ordinary cord materials, resists heat blowouts and flex breaks. This is why the FLEX-RITE NYLON body outwears even the extra-thick Rock Service tread, can be retreaded over and over.

See your B.F. Goodrich Smileage dealer today and find out how you can save on tires for all types of off-the-road jobs. He's listed under Tires in the Yellow Pages of your phone book. B.F. Goodrich Tire Co., A Division of The B.F. Goodrich Co., Akron 18, Ohio.

Enter the B.F. Goodrich Truck Tire Mileage Contest. You can win a Thunderbird or Corvette or one of 310 other prizes. See your B.F. Goodrich dealer for entry blanks.



B.F. Goodrich *truck tires*

ROCK PRODUCTS, March, 1959

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HINTS AND HELPS

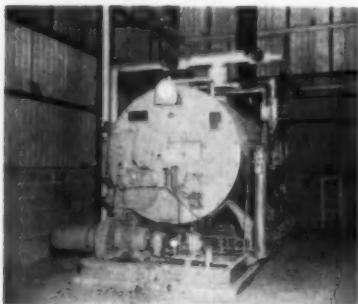
(Continued from page 68)



Tired sign

OLD TRUCK TIRES come back from oblivion to do a lot of useful jobs around many sand and gravel plants, and other rock products operations. This tire carcass was filled with concrete and cored to hold a pipe. It makes a handy sign which is practically indestructible and commands a lot of respect in the roadway. Courtesy National Crushed Stone Association.

Fuel oil steam



A WESTERN PORTLAND CEMENT manufacturer used a sharp pencil to figure his fuel oil costs out to several decimal places, and realized that economies could be realized by bulk purchases of bunker "C" and other heavy, high-heating value fuels. However, to assure that these oils could be readily handled at all times it was necessary to install an automatic steam generator. Even with the cost of the additional equipment to heat the oil, there are some very substantial savings in its use.

"Sputnik"

PRIMARY CRUSHER OPERATORS often have prayed for something jet-propelled to break jams of rock in their big crushers. It's no place to send a man, but that is often the only way to find the key rock which is holding up the whole mass.

A Midwestern cement mill devised this ingenious hook which has worked well. It is simply a steel bar about 6 in. diam., pointed at one end, tapered and drilled for a clevis at the other end. Four slots are cut, about 1 1/4 to 1 1/2 in. wide and about 6 in. long, to hold four bars and the bars are inserted and held with pins.

As the operator drops the bar into the mass of rock, the four hinged bars fold back into their slots. But when the bar is lifted slowly, the "hooks" open out and engage pieces of rock. The whole assembly weighs about 300 lb., enough weight to force the pointed



sputnik deep into almost any rock jam. The operator has acquired enough skill to put this device right next to the key stone almost every time and to pull it clear.

Asphalt molehill prevents mountains of complaints



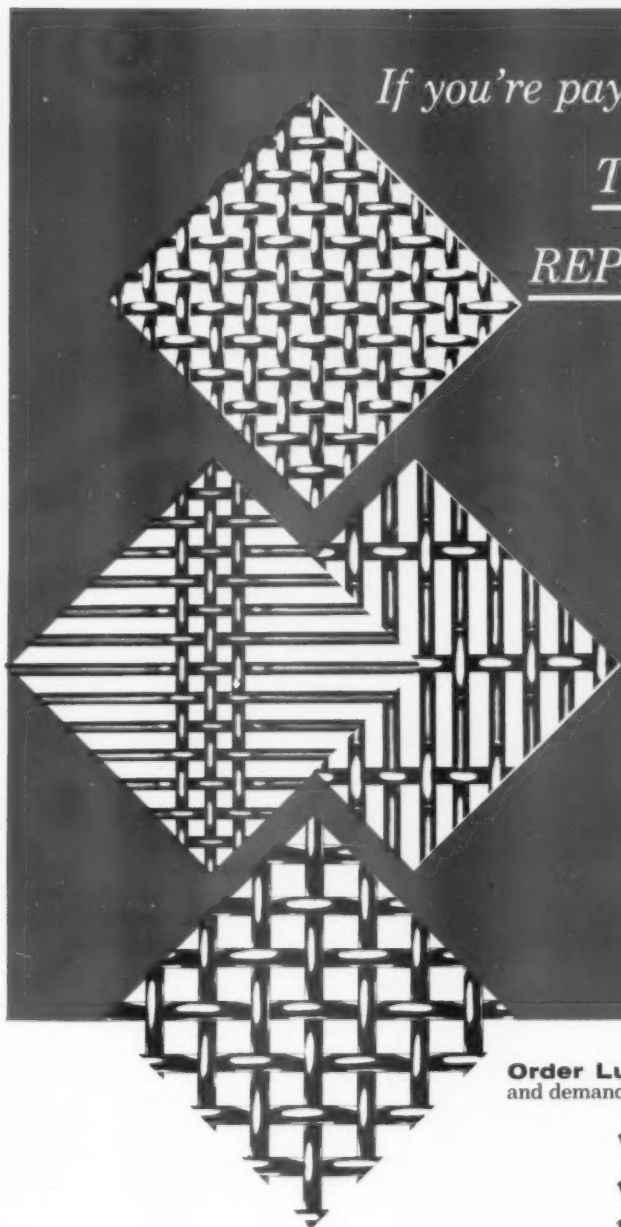
THIS UNIMPORTANT-LOOKING PAD of bituminous concrete is one of the best public relations tools that an eastern sand and gravel producer has—and he knows quite a few ways of building good will.

It is nothing more than a drainage table which is used any time there is moisture in the materials shipped. This can be after a summer's downpour, during the snow and sleet of winter or when the loading machine picks up freshly washed aggregates. It takes only a short time for excess water to

drain out of the material and to collect in the bottom of the truck.

Then the driver parks the truck on the inclined plane, which is about 18 in. high in front, and lets the water spill out the back of the truck. A 5-min. delay here spares the company plenty of complaints from other drivers on the highways, cuts objections from irate housewives in residential districts to muddy streets and makes the customer happy when a dry or only slightly damp product is delivered.

END



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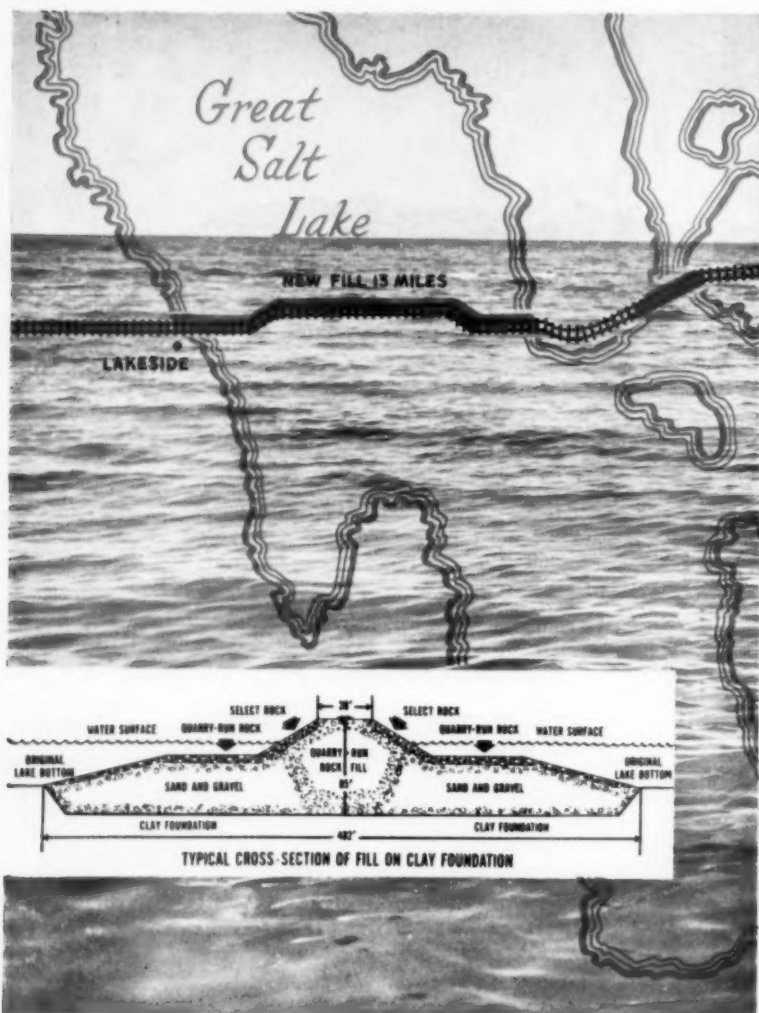
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Southern Pacific bridges an inland sea with 36,000,000 yd of rock, sand, gravel

Great Salt Lake, Utah—Take a mountain of rock, sand and gravel—36,000,000 yd of it...stretch it 12.6 miles with the help of the world's biggest tractor shovels...then sink it 68 to 85 feet deep into Great Salt Lake. That's how the men of

Morrison-Knudsen are building a new, solid-fill, deep-water, roadbed for Southern Pacific Railroad across Utah's great inland sea. Allis-Chalmers HD-21G tractor shovels play an important role in this gigantic undertaking.



Multi-million dollar job passes halfway mark

The monumental job, scheduled to finish in 1959, triggered some of the largest non-atomic blasts in history to supply fill material. One blast powered by 2,138,000 pounds of explosives yielded 3,700,000 cu yd of broken rock.

Most of the fill is being placed by a fleet of eleven barges loaded by two methods. One is a spectacular two-mile conveyor system said to be the world's largest in terms of tonnage moved—4,000 to 4,200 tons per hour.

4-yd HD-21G's work ashore and afloat

The second method is by trucks that dump directly to barges. This fleet of 17-yd dump trucks moves constantly from stockpiles adjoining railroad tracks to the barges on a 20-hour a day schedule. Much of the truck loading is handled by Allis-Chalmers tractor shovels, only tractor shovels on the job.

With characteristic versatility, the tractor shovels are also able to board the barges and help place



...move ahead with **ALLIS-CHALMERS**...



Giant 225-hp Allis-Chalmers HD-21G tractor shovels handle their share of the fabulous 36,000,000 cu yd of fill going into the causeway. Production on the job has hit as high as 100,000 cu yd in a single day.

rock ballast on the causeway itself. If their loading ability is needed on the opposite shore, they are easily transported by barge or regularly-scheduled work train.

For a big job—big machines

Men talk about the Salt Lake Causeway job in superlatives. Big machines moving tonnage at a record-breaking pace. And the HD-21G's on-the-job advantages match it all the way: the *highest* lift and the *longest* reach—with the *biggest* load. From ground

level, the 4-yd bucket dumps handily up to 13 ft, 4 in.—high enough to clear the sides of the biggest haulers.

Morrison-Knudsen keeps close service records of each machine on the job. Service logs for the HD-21G's show they put in maximum time—offer top availability to keep producing.

Here's actual proof on a heavy-duty tractor shovel operation

that Allis-Chalmers maintenance and service cost is low—that you get more profit-making availability and production from your Allis-Chalmers equipment. Your Allis-Chalmers construction machinery dealer will demonstrate the size tractor shovel that fits *your* work—1½, 2¼, 3 or 4-yd capacity. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.



225 net engine hp
66,500 lb
4-yd bucket capacity
HD-21G

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DON'T force your customers into the rock business!

by Warren D. Fish
as told to Joseph N. Bell

In this concluding installment of a two-part interview, Warren D. Fish—Chief of the Construction Administration Branch of the Bureau of Public Roads—gives some advice to rock products producers on how better to compete with contractors entering the rock business. Mr. Fish is well qualified to make these observations. He has been in highway work—in South Dakota and Missouri before he joined the BPR in 1934—almost since the beginning of paved highway systems. Last month, Mr. Fish described in Rock Products the importance of conserving our mineral resources.

ROCK PRODUCTS PRODUCERS are making competitors out of many of their customers. So says Warren D. Fish of the Bureau of Public Roads. Furthermore, Mr. Fish contends, the contractors who are being forced into the rock business by the lack of proper road building materials have no desire to get into this field at all.

Mr. Fish made these statements in an exclusive interview in Washington with this ROCK PRODUCTS reporter. He also offered five suggestions on how rock producers might better take advantage of the expanded road building program. They are described in detail in the verbatim report of the interview which follows. Almost everything is on

FIVE WAYS to take

the increase in highway expenditures in the years immediately ahead. State funds available for road building will increase from \$2.6 billion in 1958 to \$3.1 billion in 1962; local road building funds will grow from \$1.1 to \$1.3 billion in the same period; and capital expenditures for all highways will increase from \$6.2 billion to \$8.1 billion during these four years. Only toll road construction will be off—declining from \$500 million last year to \$75 million in 1962. But this slack will be more than taken up by increasing free road expenditures.

This is a wealthy and burgeoning market, of which—in Mr. Fish's studied opinion—rock products producers are not taking full advantage. In the following interview, he tells why, and also what he would suggest they do about it.

Mr. Fish, what do you consider an economical shipping distance for rock products used in the federal highway program?

We asked this same question in a survey of the individual states, and it's interesting how their answers varied. In states with plentiful aggregate sources, two to five miles was considered the practical shipping limit, while a state with a general shortage or large shortage areas might consider up to 100 miles economical. We feel that where long hauls are required, the states should consider some of the other means—described in last month's issue—of calling for aggregates of the right quality for the respective uses to which they are put.

Whether the haul is long or short, economical or expensive, you still have to get the material, isn't that correct?

Of course; and we have to adjust the aggregate situation to the route of the road—not vice versa. So each aggregate problem of each highway construction project requires individual evaluation and has to be treated as such; but the overall need created by the current and future program multiplied many times over adds up to a big aggregate headache.

Can you make any generalizations on how those problems are being solved?

Yes. In most instances the aggregate problem on a project some distance from known commercial sources is being solved by the contractor dig-

proposed for rock producers advantage of the expanded road building program

ging his own materials as near to the job site as he can find them and crushing or screening them as needed.

Is this the way the contractors want it?

To a contractor, buying his aggregates or mining them himself boils down to a simple economic equation: Which will be cheaper for him? Most contractors don't want to get into the rock business. But if they're forced to by the unavailability of commercial aggregates, then they're likely—but not certain—to stay in it on subsequent jobs, even when aggregates may be commercially available.

Then, in many instances, the rock producers are seeing customers whom they can't or aren't in a position to supply economically, actually turning into competitors?

Yes, indeed—in more ways than one. Because some of the contractors, once forced into the rock business and buying equipment, are selling aggregates to other contractors as well.

If rock producers are seeing competitors developed out of contractor-customers by the necessity of their getting a start in the aggregates business, what then do you suggest the rock producers might do about this situation?

Well, the obvious answer, it seems, is that the commercial rock producer should at least consider exploring and developing job site pits himself and contracting to dispose of specification materials to the contractor. It appears to me that the commercial aggregate producers might well make a stronger effort to explore the roving rock business. After all, all the highways are not going to be built in towns. A lot of rural miles of highway are also in the program.

Do you ever have rock producers seek help from you in deciding whether, where and when to open new pits?

A few. Frankly, I'm surprised we don't hear from more, although we are not really the best source of information for local producers because we can't be as specific as the state highway people closely connected with the highway building sites in their respective borders. However, watching this expanded federal aid program develop—es-

1

Get acquainted with the people in your state highway department.

2

Reach out to the contractors as much and as far as you are able.

3

Figure your potential market as carefully and as closely as possible.

4

Armed with this information, go out and sell your product.

5

Go after your share of business, where it is, and when it comes up.

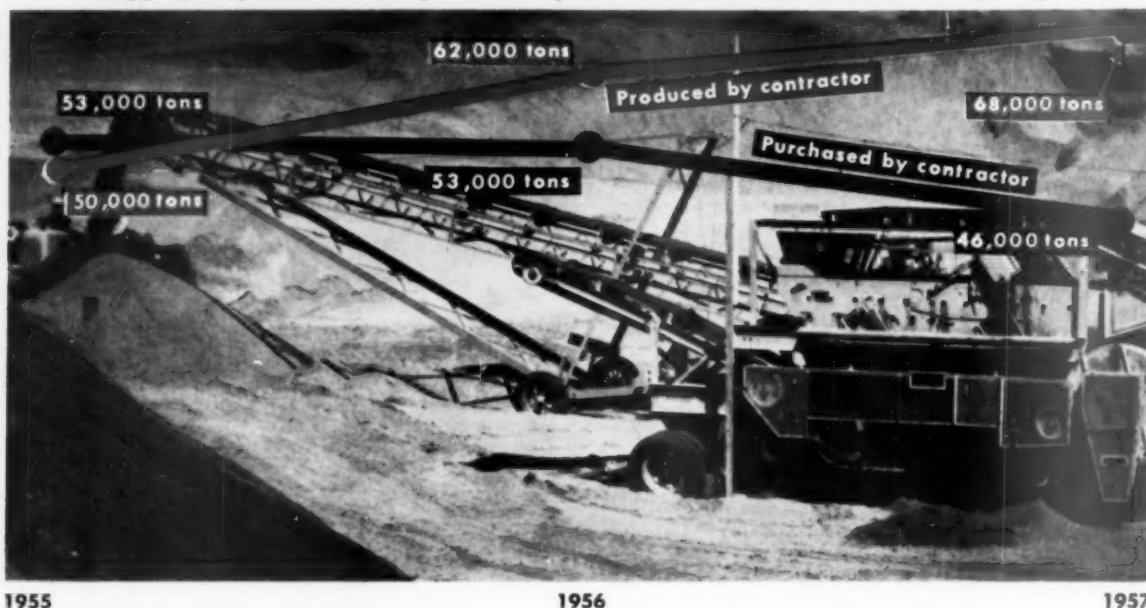
pecially in the last few years—I've worked up some rather decided views on how aggregate producers might take better advantage of the highway program.

Would you detail some of these views for the readers of ROCK PRODUCTS?

I would divide them under five headings, but first I want to point out that there are two principal highway markets for the rock producer: the state highway departments and the highway contractors. In order to serve these markets to the

Contractors are being forced

Aggregate purchased and produced by contractors for Rural Interstate Highways*



1955

1956

1957

*Per million dollars contract construction cost

W. D. Fish interview continued...

best advantage of all concerned, I would recommend that rock products producers:

1. Get acquainted with the people in your state highway department. Go to see them, and inquire into their construction potential. Get on their mailing list of notices to contractors so you'll know when jobs are going to be advertised. Lettings average from one to two a month in most states. And while you're there, try to make them a maintenance customer; the state buys directly for the maintenance of its highways already constructed.

2. Reach out to the contractors as much and as far as you are able. Make the AGC directory your business Bible; keep an up-to-the-minute list of all contractors classified as being in the "highway" or "heavy" field. These are your customers; these are the potential bidders for highway contracts in your marketing area.

3. Figure your potential market as carefully and as closely as possible. Your highway department will give you a copy of usage factors generally applicable to rock products in your area. For paving, you can usually figure that the aggregate required will be about four-fifths of the cubic yards of concrete needed. Develop other conversion factors for bituminous pavements and structural concrete.

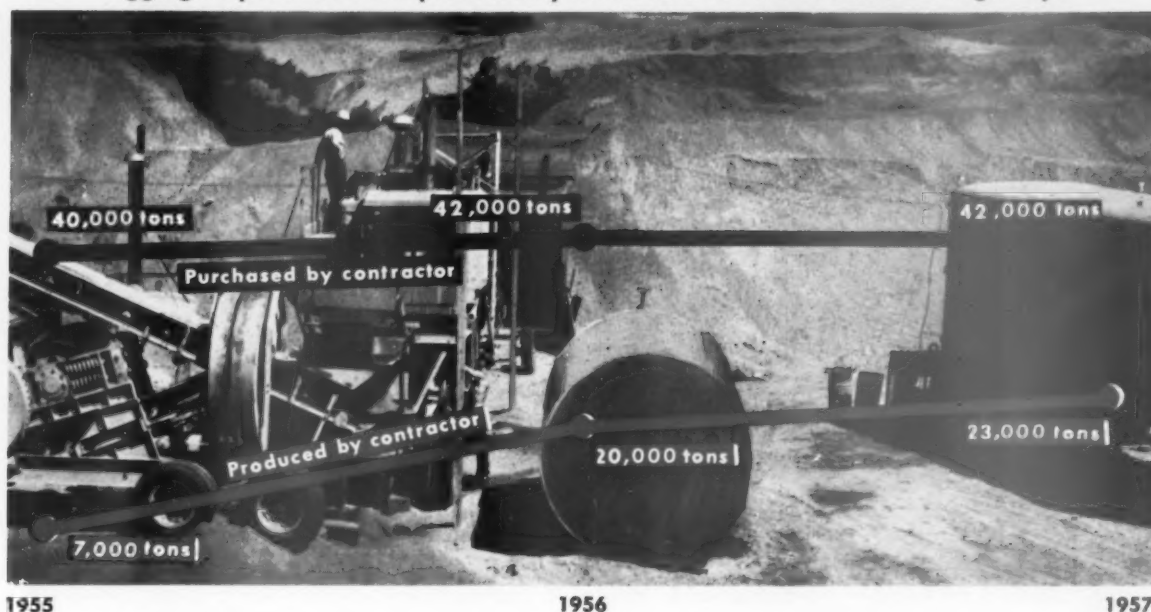
4. Then, armed with this information, go out and sell your products. In this competitive market, nobody is going to beat a path to the rock producer's door. I remember a concrete pipe manufacturer who complained to me that he wasn't selling his pipe on federal aid jobs, even though it was a good product and properly priced. He claimed he was being discriminated against. Both his trade association and this department told him the same thing: "Get out and sell your product." He hired a competent salesman, turned him loose, and started to solve his problem almost overnight.

5. Finally, if contractors get in the habit of digging their own materials, they're likely to continue to operate that way, especially if they have invested heavily in portable crushing and screening equipment. Soon these contractors are not only supplying their own aggregate needs but those of other contractors as well. If you expect to get your share of this business, you'll have to go after it, where it is and when it comes up.

Statistics on the sales of portable rock plants indicate that the trend has decidedly been toward contractors buying them. Right now the aggregates market for the federal highway program is split about equally between commercial producers and contractors. Two-thirds of the contractors' portion of this market (the other third is bank

into producing their own aggregate

Aggregate purchased and produced by contractors for Urban Interstate Highways*



*Per million dollars contract construction cost

run material) probably could be provided by commercial producers. But the trend is in the other direction—and unless the commercial producers take appropriate measures, their market is likely to continue to slip away from them. And this can happen in spite of the fact that the know-how of commercial producers should enable them to operate in the field more efficiently than many contractors who possibly didn't want to get into this business in the first place.

Specifically, what do these statistics show?

Our weighted averages for 1955 showed that commercial producers were supplying slightly more than half of the aggregate on the rural portion of the interstate system. By 1956 commercial producers were supplying about 46 percent, and by 1957 it was down to only about 40 percent. This same trend is evident on urban interstate highway construction projects as well. Contractors were producing only 14 percent in 1956; today they are producing almost one-third of the aggregates in urban areas where many commercial products plants are operating.

If a commercial rock producer subcontracts an interstate system job, does he come under any federal restrictions?

There is one special problem that should be

pointed out if an aggregate producer subcontracts materials for an interstate highway project. Under the minimum wage provisions of the 1956 Federal-Aid Highway Act, minimum prevailing wages must be posted on each job and applied to the labor crafts for a contractor's forces and those of his subcontractors. Although these vary by area of the country and within the locality of a highway improvement, they are set by the Department of Labor and must be adhered to by the contractors building interstate federal-aid highways. As a supplier, the aggregate producer is not affected by these wage restrictions. But if he subcontracts the work for the contractor, then he must observe minimum wage requirements.

How do you see the future prospects of the rock industries?

You realize, of course, the only part of the aggregate picture I'm close to is that of the highway field. But in that area, the prospects are really tremendous. The market is there; it's simply up to the rock people to get together with their customers—the state highway departments and the highway contractors. There's no end in sight for the burgeoning highway program. And even when and if new construction falls off, the maintenance need will have already more than picked up the slack.

END



From this room...with this TV

Industrial television permits Ideal Cement Co.

*by David LeClair**

INDUSTRIAL CLOSED-CIRCUIT television allows continuous remote observation of the burning zones of the two kilns at Ideal Cement Co.'s new Houston, Texas, plant. A high degree of instrumentation, aided by constant visual inspection, has resulted in the production of highly uniform clinker.

With the TV setup, it is not necessary for instruments and controls to be located in the immediate area of the kiln firing hood—an arrangement that hindered good plant layout and efficient use of manpower. Now, the material and conditions within the burning zones can be visually observed on monitors located in an air-conditioned central control room.

All instruments and controls are also grouped in this strategically located room, giving one control room operator complete command of all raw and finish milling and storage operations.

The plant has two 12 x 450-ft., wet-process kilns using natural gas for fuel. Each kiln is provided with a complete closed-circuit system consisting of a camera, a power supply and control unit and a monitor.

The camera is a Model 300 Utiliscope equipped with a cold cathode, image dissector-type pickup tube which has no filament. Tube resolution is 300 lines. The tube is designed for operation under difficult conditions. To provide efficient viewing, the camera is mounted on a bracket-type platform attached to the kiln hood approximately 3 ft. to the right and 1 ft. below the burner line or axis of the kiln. Due to the high ambient temperature, near 2,100 deg. F. at the camera viewing port, the port is equipped with an auxiliary source of cooling air.

This Utiliport window assembly consists of a heat-resisting Vycor glass plate covered with a special heat-reflecting coating and cooled by distributed air flow.

Cool dry air at about 150 cfm. is introduced into the air chamber of the viewing port through a 3-in. inlet from a blower. At this point the air is circulated over both sides of the glass window and allowed to escape to the kiln interior. A portion of the cooling air is simultaneously diverted through a 3/4-in. line to cool the entire camera. Compressed air provides a standby source.

A power supply and control unit for each camera is mounted in a cooler area approximately 40

*Maintenance Supervisor, Ideal Cement Co., Houston, Texas



camera ... kiln burning is closely controlled

to continuously inspect the burning zones of its two kilns

ft. behind the cameras. All necessary camera controls are provided, including electrical focus and video gain. An automatic gain circuit compensates for any variations in light level. Once adjusted through the power supply and control unit, the cameras require very few readjustments.

The monitors have 17-in. screens and are located in the air-conditioned central control room 150 ft. behind the cameras. They are connected to the camera control units by coaxial cables. By adjusting the monitor controls, the operator can vary picture contrast, brilliance, focus and horizontal and vertical synchronization.

Placement of both television monitors in the centralized control room is a big help to the operator.

The high degree of instrumentation, aided by the visual observation by television, has resulted in the production of highly uniform clinker. This is primarily due to the fact that the operator can now quickly adjust for correct flame characteristics and proper clinker formation, thus closely controlling the physical characteristics of the final product.

Since the operator can scan the kiln interior from the "load line," approximately 50 to 60 ft. from the firing end to the point of the clinker dis-

charge, he can continually check on the flow of slurry and the formation of the clinker. Clinker ring formation can be observed. The operator can also quickly spot any local overheating by noting the thickness of the coating forming on the refractory lining in the burning zone, and by watching the size of the clinker as it falls.

With a fully centralized system to regulate the production process—assisted by closed-circuit television—Ideal operators have an extremely high degree of control. The operators are now able to control the basic variables influencing the production of uniform and acceptable clinker.

Process improvement is one of Ideal Cement Company's prime goals. It is an important weapon in the constant battle against rising costs. The use of full instrumentation and closed-circuit television will be used on most new kilns being installed by Ideal. Also under investigation is the further application of remote observation by television in their plants.

The system at the Houston plant was developed in cooperation with design and application engineers at Diamond Power Specialty Corp.'s Electronics Division in Lancaster, Ohio. Diamond, Utiliport and Utiliscope are trademarks of Diamond Power Specialty Corp.

END

Typical field setup includes aluminum-cased resistivity instrument (left), battery holder, and stakes or electrodes with their connecting wires



Illinois Geological Survey photo

Resistivity survey - a good bet in

**This method—called electrical earth resistivity—
is a quick, economical way to find
depth, extent of deposits before test boring**

THE ELECTRICAL EARTH RESISTIVITY METHOD is a quick, economical means of finding and mapping deposits of sand, gravel and limestone from the surface. Like other geophysical methods of exploring the earth, it is not without faults. A conservative approach, good operating habits and a basic knowledge of the way earth materials occur in nature are the best guarantees of successful prospecting.

The resistivity of a material is the resistance offered by a known volume of that material to the flow of electrical current. Because of their great variety, earth materials have many different resistivities. Sands and gravels generally have higher resistivities than soils rich in clay. Dense crystalline rocks like limestone have higher resistivities than porous sandstones and shales, which often contain electrically conducting water in their pore spaces.

Although electrical currents occur naturally in the earth, they are not used in resistivity prospecting. Natural currents are too variable and do not permit any control of the depth of investigation. To obtain greater reliability and depth con-

trol, artificial currents are made to flow through the earth. A known and controllable amount of electrical current, preferably alternating current of low frequency, is put into the earth by two metal electrodes or stakes, C_1 and C_2 in Figure 1. The current flows through the earth between the two electrodes.

The calculation of a resistivity value requires more than a knowledge of the amount of current flowing between the stakes. To permit calculation of the resistivity, we must know how the voltage changes as we change the current. To control the depth of exploration, we must know what the spacings are between the electrodes; for as the spacing between the electrodes is increased, the depth reached by the current is increased. Exploration has shown that if two voltage-measuring electrodes, P_1 and P_2 in Figure 1, are placed between the current electrodes and if the spaces labeled "a" are kept equal to one another, we will have enough information to calculate the resistivity of the earth under the electrodes to a depth about equal to spacing "a". A gradual increase in resistivity values is normal with increasing depth in uniform soil or rock, because a larger volume of material is being tested each time the "a" spacing

*Associate professor of engineering geology, Purdue University

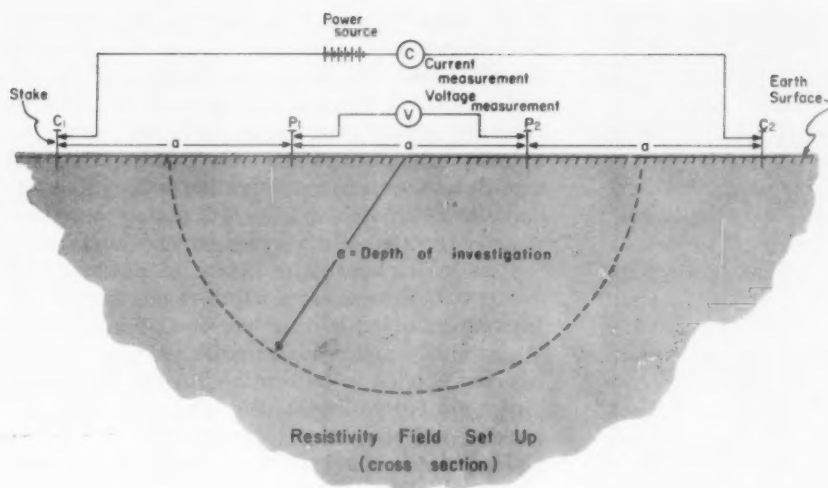


Figure 1. Resistivity is found at depth "a" by placing the four electrodes distance "a" apart. Sudden change in resistivity shows change in earth strata

preliminary searches for deposits

by Robert B. Johnson*

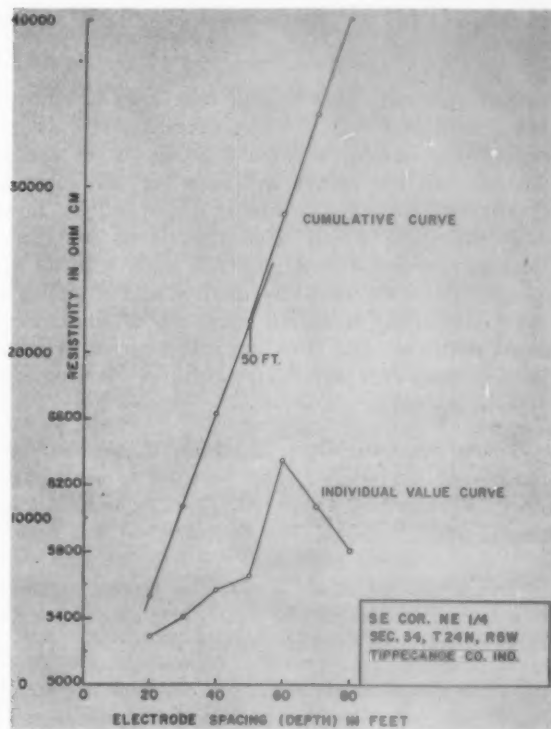
or depth is increased. But a sudden change in resistivity at a certain spacing or depth may be attributed to some change in material at or near the new depth. This feature of the method permits the recognition of the change from one material to another, such as found in interbedded sands, gravels and clays or soil over limestone bedrock, or other common formations.

Many types of electrical resistivity equipment are in use, but they all operate fundamentally alike in that current, voltage and spacing values are used to obtain resistivity values. Some instruments are constructed to read directly in resistivity units, which eliminates any calculating. Such instruments are of distinct advantage because the progress of a survey may be followed as the survey continues without having to calculate resistivity values.

The equipment used in materials surveys is lightweight, portable and powered by batteries. The alternating current desired for most efficient field operation is obtained from the battery current by means of a hand or motor-driven commutator or by a vibrator which operates on the same principle as the ringer on a door bell. No serious disadvantages are to be found in either of these methods of obtaining alternating current. The choice is principally one of personal preference and economics.

In operation, the equipment needs only one

Figure 2. Resistivity at various electrode spacings (and thus at various depths) is shown here in the "individual value curve." Break in curve at 50 ft. depth indicates change in strata. "Cumulative curve" gives cumulative sum of resistivities; break in otherwise straight line is at 50 ft.



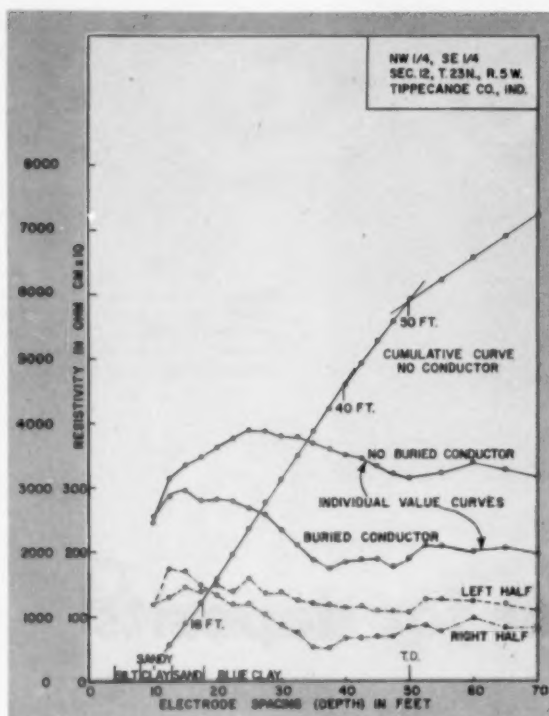


Figure 3. "Buried conductor" curve shows unusually low readings gotten when buried conductor such as water pipe is at test site. Two bottom curves show pipe is to the right. Guide to subsurface strata is plotted at bottom. It is taken from well driller's log for nearby well, or outcrop data

Resistivity *continued...*

skilled operator, plus two to four men to handle the stakes and reels for the current and voltage wires—the number of men depends on the speed desired and the money available for the survey. Quality of resistivity data is controlled by how efficiently and wisely field operations are conducted, because success depends upon a blend of knowledge of the resistivity method and of geological conditions. The actual operation of the equipment requires little training, although experience is necessary for trouble-shooting if equipment fails in the field.

There are two ways in which the resistivity method of exploration may be used to locate aggregate materials, whether they occur as sand and gravel or as bedrock. The first method is a quick or reconnaissance procedure for locating the area in which the materials occur. The second method is a more detailed survey which provides depth or thickness values for the deposit.

In the reconnaissance survey, an electrode spacing is selected which is equal to the depth limit to

which operations may be economically extended. The equipment is then set up at a number of locations in the area being investigated. If the soil and bedrock conditions are constant in character from the pre-selected depth, there will be no significant differences in the recorded resistivity values. But, if we are investigating a buried gravel deposit in clay-rich soil, we will notice changes in resistivity as we test locations over which irregularities in thicknesses or cleanness of the gravel occur within the selected depth range. In this way the mappable limits of a deposit may be obtained quite rapidly and accurately. The same technique is often applied to determine quickly the irregularity of a buried limestone surface. Test holes for proving reserves may be more efficiently placed and estimates of overburden volume may be made as a result of this type of survey.

The detailed resistivity survey involves the collection of resistivity readings obtained by changing the electrode spacing at each location. The different values with increased spacing or depth may be used to determine the changes which occur in the material and the approximate depths at which the changes occur. Interpretation of resistivity data from a detailed survey usually is made by plotting the data in the form of a graph. Figure 2 is a typical graph on which the resistivity values from such a survey have been plotted with respect to spacing or depth. The curve is labeled "individual value curve" because each resistivity value is plotted for the corresponding depth or spacing. In this example the abrupt change in resistivity at 50 ft. corresponds to the contact between glacial drift and bedrock. The resistivity values are low and indicate materials having considerable clay. Nearby wells indicate clay-rich glacial deposits over shale bedrock. This method of plotting the data permits interpretation of changes in materials that occur in the subsurface by observation of resistivity values. It also permits an estimation of the depths by showing the points at which the slope of the curve changes, denoting different conditions.

The graph of the individual values does not always provide as clear a means of determining depths as the one shown in Figure 2. Another standard graphical solution to this problem is to plot an accumulation or summation of resistivity values for each depth; that is, the resistivity amount plotted at 40 ft. is equal to the sum of the resistivities obtained at all the depths from 5 to 40 ft. as shown on the individual value curve. This plot of the summation of values is called the "cumulative curve." Note that straight lines may be drawn through the values and that the break in these lines coincides with the depths at which the changes in material occur.

The resistivity method has limitations or restrictions of which an operator should be aware. The most important restriction is the need for some kind of advance subsurface information on the area being investigated. This information can be from a driller's log of a nearby well, samples from such a well or exposures of materials in a quarry or valley wall. This control tells the operator what type of material gives certain resistivity values during a test set-up at the control site and the depths at which these values occur. With this knowledge of the area, the resistivity survey may be used to extend the investigation into adjoining untested areas.

A serious limitation in towns or industrial areas and some rural areas is the presence of man-made electrical conductors in the ground, such as pipelines or fences with metal posts. Anything in the immediate vicinity of an electrical resistivity survey which tends to short-circuit the current from its normal path through the earth will give false readings on the equipment. The presence of such a conductor is indicated by abnormally low readings which do not change appreciably with an increase in depth or spacing. Figure 3 illustrates the change in resistivity values caused by setting the equipment up over a buried water line. Notice the

difference in resistivity value between the individual value curve of the survey over the buried electrical conductor and one obtained away from the conductor. The right and left-half curves were obtained with typical modern equipment which permits the instrument man to compare resistivity readings on either side of the center point of a field set up to determine the side on which a change in the subsurface occurs. In Figure 3, the stakes to the right of the center were over the buried pipe. This is a form of directional control which locates a buried trouble-maker or which may be used to point the way to the next test site. The difference between the two sides usually has a natural cause; in this case it could have been the thickening of a gravel bed to the left, which would cause the left half to be higher in value than the right half.

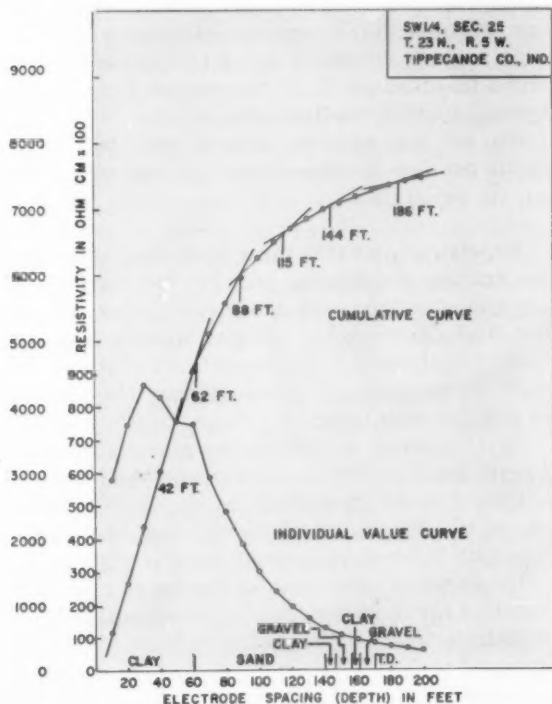
Interpretation problems will also be faced by users of the resistivity method of exploring the subsurface. Any user of the method should realize that when obtaining information from the earth, he is working with many conditions over which he has no control. Some earth materials do not have the resistivities which are considered typical for them; the presence of electrically conducting fluids in the pore spaces and unexpected changes in materials are the most important causes of this situation. An example of this absence of correlation between the resistivity results and subsurface control may be seen in Figure 4. The resistivity values shown on the individual value curve do not conform to the materials from an adjacent well, which are shown along the bottom of the graph. The technique of drawing straight lines on the cumulative curve is of little value here, as any number of lines may be drawn at different points on the curve below a depth of 60 ft.

The object of presenting an example such as shown in Figure 4 is to indicate that there are areas in which the resistivity method cannot be employed, in contrast to the many areas in which it has been used with success. It emphasizes the need of conducting a trial survey near some subsurface control point to determine how well the method responds to the local geologic conditions. The time to learn whether or not a method will be successful in an area is before a survey is made, rather than afterwards.

When properly used, the resistivity method has proved to be a rapid and economical means of obtaining subsurface information. It has been most successful in outlining sand and gravel deposits in glacial drift and in mapping irregular surfaces on limestone bedrock. Experience in operating resistivity surveys and interpreting the data is the best guarantee of the proper use of the equipment for exploration purposes.

END

Figure 4. Sometimes method does not work; this should be found out before complete survey is made. Note that here, because earth materials (depth plotted at bottom) have unusual resistivities, neither individual nor cumulative curve indicates actual strata depths



Roving crushing plants bolster aggregate stockpile system

*Typical is the operation of
Frank G. Baulne, Inc., in the Pacific Northwest*



by Pat Thomson*

HERE IN THE PACIFIC NORTHWEST natural deposits of gravel are scarce, and stationary crushing plants are few and far between. The result: A unique breed of crushed stone producer, the roving crushing contractor who produces a series of aggregate stockpiles at various setups designated by county road departments or the state highway department. Typical is the operation of Frank G. Baulne, Inc., of Spokane, Wash.

In our part of the country, pit-run gravel strata are small and lean, running heavily to sand that must be scalped. The pit-run material is highly undesirable in quality, being extremely hydrophylic or having a limestone coating that makes the rock unsuitable for bituminous surfacing. The major source of supply is lava basalt quarries, but, cost-wise, hauling distances from stationary plants are prohibitive.

This is the situation that gave birth to the stockpile system. In Douglas County, Wash., for example, our contracts run from \$80,000 to \$150,000 per year with from 6 to 9 stockpile setups varying in size from 5,000 to 20,000 tons. Baulne, Incorporated, is one of the operators serving our requirements.

The name Baulne has been associated with crushing for more than 30 years. Frank Baulne entered the game as a young man, serving a 17-year apprenticeship as a plant superintendent. After World War II, Mr. Baulne realized his dream

of owning his own outfit. From that dream has grown an organization grossing more than \$2 million yearly. Even in the face of present drastic price-cutting, with minus $\frac{3}{4}$ -in. material from a shot-rock quarry going for 81 cents per ton, Mr. Baulne has kept his plants busy—and making money.

How he does it can be seen in his progress on our most recent bituminous surfacing project. This project required 4 in. of $1\frac{1}{4}$ -in. base course and 2 in. of minus $\frac{3}{4}$ -in. top course. Even with a two-mile uphill deadhaul, Mr. Baulne kept eight 13-cu. yd. bottom-dump wagons busy two 10-hr. shifts per day. Average production was over 1,500 cu. yd. per shift.

Mr. Baulne operates three portable plants—one for grading and hauling projects, one for stationary quarry setups such as silica crushing and one for stockpile work for the government agencies. Size of equipment is the same in all three plants, with the exception of a cone crusher which varies in size for each plant.

Shot material is fed to the primary crusher, where possible, by a tractor equipped with a U-shaped dozer. In difficult or long-haul feeding, one of two $1\frac{1}{2}$ -cu. yd. shovels is used in conjunction with 7-cu. yd. shuttle dumpers.

In operation, shot-rock is fed to a 4 x 10-ft. standard apron feeder. This is just ahead of the 20 x 36-in. primary jaw crusher, which breaks the material to 6 in. From here, broken aggregate is conveyed to a 4 x 14-ft. double-deck screen. Ag-

*County Engineer, Douglas County, Wash.



From the primary crusher, material goes first to the double-deck screen and then to the cone crusher

gregate of the desired size is scalped out, by-passing the rest of the operation. The remaining oversize is carried to the cone unit, which crushes down to about $1\frac{1}{4}$ in.

This crusher product is conveyed to another double-deck screen where the scalping process is repeated, the correctly sized aggregate going to a bunker for hauling and oversize passing to a 54 x 24-in. roll crusher. This crusher produces the necessary fines to bring the final product up to contract specifications.

Moving and setting up can be major time- and labor-consuming items in multiple-setup crushing—items that make the difference between profit and bankruptcy. Here the compact mobility of the crushers aids immensely. Once the site is visited and the move is visualized, moving is done progressively. The jaw crusher and the tractor go first; after the crusher is set in place, each item of equipment can follow in order.

Constant preventive maintenance keeps the Baulne plants operating continuously during pay hours. All diesel units have an oil change every 100 hr., regardless of oil cleanness at the time of inspection. Air cleaners are removed and cleaned four times daily. A mechanic-welder works on a staggered shift, coming 2 hr. later than other employees. He hardfaces on the rolls and takes care of general maintenance of skirts and chutes.

The Baulne organization has a state-wide reputation for speed. Frank Baulne gives due credit to his crusher units. Igneous basalt is a notoriously



Here all belts are running to full capacity carrying the pay item of minus $\frac{3}{8}$ -in. stone

hard rock to crush, yet his jaw crusher chunks out a steady supply of broken material for the other units. Every bit of fines has to be ground out the hard way by straight roll crushing. And in material requiring 65 percent minus $\frac{1}{4}$ in., the rolls really have to work. But once Mr. Baulne gets his plant "set" to specification, a steady stream of pay aggregate flows into the bunker for the waiting trucks.

END

MAJOR EQUIPMENT USED BY FRANK G. BAULNE, INC.

Tractor-dozers, D8	Caterpillar Tractor Co.
Shovels, $1\frac{1}{2}$ cu. yd. (2)	Manitowoc Engineering Corp.
	Bay City Shovels, Inc.
Shuttle-dumper, 7 cu. yd.	Koehring Div., Koehring Co.
Primary jaw crusher, 20 x 36 in.	Pioneer Engineering, Div. of
Roll crusher, 54 x 24 in.	Poor & Co.
Screen, 4 x 14 ft., double-deck	Iowa Mfg. Co.
Cone crusher, 4 ft.	Nordberg Mfg. Co.
Bottom-dump wagons, 13 cu. yd. (8)	M-R-S Mfg. Co.



Red-hot cakes of sinter on way to storage

by Elwood Meschter

Lignite fuels

Raw materials readily

LIGHTWEIGHT AGGREGATES ARE NOW AVAILABLE to concrete products producers in the North Central states. In a suburb of Minneapolis, North Central Lightweight Aggregates Company has recently completed a \$1½-million, 50 tph. traveling grate installation. It will ship by truck or rail to concrete products producers within a 150-mile radius of the Twin Cities.

First marketable products have been lightweight "sands" weighing about 1,400 lb. per cu. yd., in sizes ¾ x 3/16 in. and 3/16 in. x 0. First users of the material have been able to make standard 8-in. concrete block weighing 25 to 26 lb. without loss of structural strength. But almost before the new plant is in full production, the owners have started a program of producing a premium-grade product which they expect will enable a block producer to make 28 to 30 block for each bag of cement, each block weighing about 23 lb.

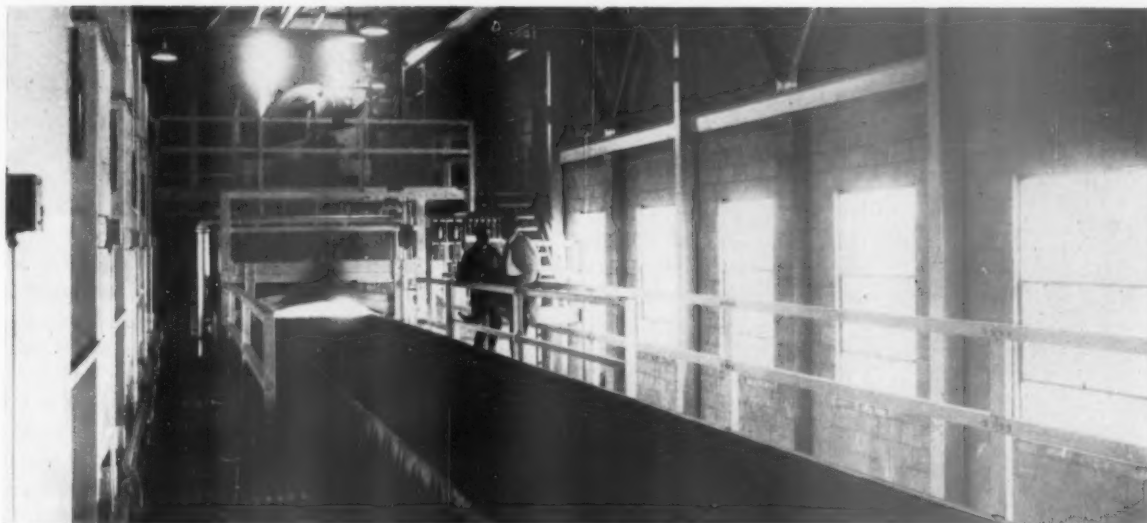
Raw materials for the new plant are readily available in this northwest suburb of Minneapolis in a 300-acre deposit of glacial clay which practically surrounds the plant. The clay is of remarkably uniform moisture, chemistry and physical consistency throughout its 40 to 160-ft. depth. First production has used the clay just as it came from the pits, only grinding it to size before it was fed to the sintering machine.

Clay preparation machinery will be designed which will grind and dry the raw material ahead of the traveling grate. Additional storage bins and materials handling equipment will be added to supplement the work of the new mills and dryers. When the upgraded material is fired, it will certainly yield a lighter, stronger aggregate.

This installation is probably the first to use lignite as fuel. Lignite from North Dakota is added to the pelletized mixture of clay and partially sintered fines fed to the down-draft traveling grate sintering machine. However, the aggressive owners have determined that petroleum coke can replace some of the lignite in the mixture to achieve better burning conditions on the grate, to make a stronger aggregate and to get better fuel efficiency at the same time.

new traveling grate installation

available for N. Central Lightweight Aggregate Co.



The 85-ft.-long traveling grate looking toward the firing head and pelletizing drum

Concrete products makers in the Minneapolis area have indicated their preference for more of the finer fractions in the 3/16-in. x 0 material than plant had originally been designed to make. Within the first few months of operation which started during October, 1958, the final double-roll crusher was replaced with an attrition mill. This unit now makes the increased amount of fines needed to make concrete block with smoother, dense surfaces.

When the problems of producing materials to completely satisfy the needs of block makers have been solved, larger sizes of lightweight aggregates will be offered to meet the requirements of ready-mix producers and prestressing plants.

Flexibility has been designed into the plant, permitting it to operate in several independent processing sections. Raw materials will be received, stored and processed independently of the traveling grate, while the grate will make sinter cake and send it to storage at about 700 cu. yd. an hour. The final crushing and screening section processes and stores finished aggregates at better

than 75 tph. The capacity of this section of the plant is limited only by the capacity of the two concrete stave silos which each hold about 500 cu. yd.—125 tons—ready for truck or rail shipment. And the silos permit continuous shipping without operating any other part of the plant.

Raw yellow clay is brought from the deposit by the contract stripper and haulers and put into a covered storage shed. This storage shed holds enough for several weeks' operation and protects the clay from winter snows or summer storms. The bulldozer operator has the opportunity to use the driest materials and to make a crude blend of clays from different parts of the pit.

Until the new clay processing equipment is installed, the raw clay is simply pushed into a hopper with a bulldozer. An apron feeder now puts clay on an inclined belt conveyor leading to the primary crusher, a 42 x 36-in. swing-hammer mill designed to reduce material to minus 1/2 in. The ground clay is taken to the top of a storage bin with a belt conveyor.

Lignite or petroleum coke is brought in by rail and dumped into a track hopper on the new plant's

Pelletizing drum in action



Clay on its way to primary crusher



North Central

continued . . .

siding. Then the fuel is conveyed to a 4 x 8-ft. vibrating screen that scalps off the plus 1/4-in. oversize and drops it to a pulverizer. Crushed lignite and through-screen fines are chuted together to the foot of an inclined stacker belt which takes them to the top of a steel bin next to the clay storage bin. When this bin is full, incoming fuel by-passes the screen and crusher and is sent directly to the stacker. The swiveling stacker belt distributes lignite, or other fuel, in a pile on the ground. Then, when more fuel is needed, a bulldozer pushes material from storage back to the track hopper to be screened, crushed and put into the live storage bin.

Three bins now hold the raw materials ahead of the pelletizing and firing process. One holds the raw clay fines, another the fuel and the third holds partially sintered fines recovered from the traveling grate. These fines are taken from dust chambers under the grate and from a 5 x 10-ft. vibrating grizzly at the discharge end of the grate.

An 18-in.-wide apron conveyor runs the full length of the grate to collect the minus 1/2-in. hot fines and take them back to the head-end of the traveling grate. There the material is discharged to an inclined belt conveyor to be put into the storage bin.

Normal operation of the sintering machine calls for raw clay fines to put on a collecting belt by a belt feeder under the storage bin. About 12 to 18 tph. of fuel, depending on the moisture and density of the clay, is also metered out of storage by belt feeder. Sinter dust is fed back into the system by a vibrating feeder at about 2 to 3 tph.

The long, inclined belt conveyor bringing these raw materials to the pelletizer has a variable speed drive to vary the speed of the conveyor to suit the optimum quality and volume of pellets.

Production of pellets is now controlled by changing the belt speed and by changing both the volumes and the ratios of raw materials put on this collecting belt conveyor.

Pellet size for best operation of the traveling grate ranges between 1/8 and 5/8 in. diam. A 4 x 10-ft. drum turning at 16 to 18 rpm. is fitted with a 12-in.-diam. paddle mixer and a water spray pipe. This water helps the operator control the size and density of the pellets, with the clay, fuel and fines uniformly distributed in the finished pellet.

A swinging spout takes the finished pellets dropping from the drum and distributes them uniformly across the width of the sintering machine in a bed about 8 in. deep. Just after the grate is loaded with pellets, it passes through a gas-fired ignition zone—an enclosed, brick-lined furnace fitted with four firing heads which ignite the finely divided lignite in the pellets.

The sintering machine is made up of 6-ft.-wide heavy cast iron grates with high side plates and

Right: A pile of sinter cake has been discharged from the inclined apron conveyor

A slab of sintered aggregate, red-hot and glowing, is ready to drop off the end of the traveling grate to a vibrating grizzly



slotted bottoms. Each grate is mounted between a double-strand steel roller chain supported by rails. A variable speed drive enables the operator to control the speed of the grate between $4\frac{1}{2}$ and 8 fpm. A battery of seven wind boxes under the grate draws room air down through the ignited bed of material on the grate providing air for continuous combustion. The reaction continues until the fuel in the pellets is exhausted and the pellets have fused into a porous mass about 6 in. thick.

The red-hot glowing sinter cake is dropped off the end of the machine to a vibrating grizzly which removes dust, fines and minus $\frac{1}{2}$ -in. material, all of which are taken back to be recycled through the system. The hot slabs are discharged to the top of a storage pile. A set of water sprays at the discharge end of the conveyor chills the sinter cake enough to prevent fusing in storage.

The stationary yard crane makes other storage piles with the sintered material or takes it to the top of a screening and crushing tower. A surge hopper at the top of the tower is fitted with an apron feeder above a 30 x 36-in. double-roll crusher set to handle coarse material. All crushed sinter is dropped to a 5 x 10-ft. single-deck vibrating screen. Through-screen aggregates drop to the conveyor system to be taken to storage silos, while oversize is crushed in an attrition mill fines crusher before dropping to the conveyor.

A 6 x 12-ft. double-deck vibrating screen above the two concrete stave silos makes the two sizes of aggregates and drops them into storage. All plus $\frac{3}{8}$ -in. material is chuted from the top of the silo back to the fines crusher to be recycled through again.



The crushing and screening plant can be operated independently of sinter production

Each of the two silos can hold about 125 tons of finished lightweight aggregates ready for shipment. The bottom of each silo is fitted with two manually operated gates which load materials on a long horizontal belt conveyor leading to a truck- or rail-loading station about 100 ft. from the silos.

The new plant is near the city limits of Minneapolis and only a few miles from the intersection of superhighways which circle the city and lead to other highways radiating in all directions from Minneapolis and St. Paul. Concrete products producers beyond economic reach of truck hauling can be reached by rail service which penetrates far into the neighboring states of Wisconsin, North and South Dakota and Iowa.

END

MAJOR EQUIPMENT USED IN THE PLANT OF NORTH CENTRAL LIGHTWEIGHT AGGREGATE CO., INC.

Belt conveyors	Barber-Greene Co.
Crushers, coal, clay, sinter	The Jeffrey Manufacturing Co.
Apron feeders, conveyors	
Vibrating screens (4)	Simplicity Engineering Co.
Attrition mill	
Pelletizing drum	Thoma Steel Co.
Yard crane	American Hoist and Derrick Co.
Concrete stave silos (2)	Madison Silo Co.
Shipping scale	Fairbanks, Morse & Co.
Sintering machine	
Plant design and erection	Frank Leftwich



General view of rock production setup shows conveyor belt system discharging finished product to surge storage

Portable plant invades, succeeds,

Managing and operating ingenuity:

WHAT CHANCE IS THERE of starting a sand and gravel business in an area where competition already has stationary equipment? Can a portable plant really whip the problem of naturally fine-running pits, excessive sand and high crusher maintenance? Is there a chance, under these circumstances, of turning out specification aggregates at a profit?

When A & E Paving Co. of Arcata, Calif., planned its business start in the spring of 1958, these were some of the outstanding questions it faced. They were hardly hypothetical, for northern California, with its rainy weather and predominantly wet pits, has one of the toughest natural conditions a crushing and screening plant operator can come up against on the Pacific Coast. And, sparsely populated, it's not the construction bonanza that the San Francisco Bay area or Los Angeles is.

Managing and operating ingenuity at its best is exemplified in what A & E did to nullify these natural conditions, and to handle other problems.

Competition, the first serious problem, couldn't be eliminated by simply buying equipment. Two other firms with stationary setups covered the two-county area in which A & E planned to oper-

ate, and their equipment was good. In fact, Sam Parnum, now A & E's president, was a general superintendent for one of those firms long before A & E was born.

In his previous work Mr. Parnum had made an economic survey of the area, with a view toward enlarging his former company's paving business. But nothing was done about his report. So, fired with enthusiasm by what he had discovered, Mr. Parnum resigned and got outside help to start A & E Paving Co.

First, his survey was carefully checked and rechecked. State highway department officials were consulted to see what new construction jobs were planned. Sam Parnum talked also to county and federal agency people. This overwhelming fact came out of those contacts: There was a big potential for aggregate screening and crushing to meet paving needs in areas that lay outside the economic truck haul limits of the stationary plants.

In planning to meet this problem of competition, Mr. Parnum and his associates deliberately organized their outfit to be fastmoving and mobile. Their crushing plant was designed so it could be moved 150 miles, set up in a day's time and take a 4,000-ton job at a profit. The study showed that many jobs would be small, even though major



Heart of the system is this duplex gravel plant being fed by pit-run material from the conveyor at left

in stationary plant area

key to A & E Paving Company's success

highway construction in northern California is beginning to bring in bigger jobs.

by Ray Day

The second problem—that of fine-running pits, excessive sand and high roll-crusher maintenance—was taken care of in one stroke by the selection of equipment. The crushing plant eliminates high roll-crusher maintenance expense by its bottom-deck feed principle. An acceptable product, including the desired sand fraction, is screened out of the incoming feed at once, by-passing both jaw and roll units. High screening capacity for other sizes, too, is effective for both wet and dry materials. The 10 x 36-in. primary jaw crusher is big enough to handle most incoming pit-run gravels. Also, the large-diameter 40 x 22-in. roll secondary crusher is well balanced with the primary for optimum performance.

Proof that the toughest specs could be met easily was given on the first job. The plant worked perfectly within two shifts of the time it was set up. The job called for 32,000 tons of crushed, screened aggregates made to U. S. Bureau of Public Roads specifications for a 10-mile highway job 50 miles east of Arcata. Crusher production of paving aggregates had to meet the usual federal specs: 100 percent passing the $\frac{3}{4}$ -in. mesh, 3 to 8



Duplex gravel plant in relation to the hot plant

percent passing the No. 200 screen, with uniform gradation between these extremes. The pit, typical of many which A & E will find, was in the Trinity River bottom. It was completely saturated with water much of the time, and had an excess of abrasive sand and an over-supply of large cobbles.

The sand was handled quickly and easily by routing it through the screens to storage. Crush-



Incoming material entering the duplex gravel plant moves up this conveyor; oversize cobbles are tossed out by laborer



Plant mix aggregates are crushed so uniformly they can be dumped directly into the hot plant drier

Fast dismantling and moving time was one of the things the company searched for in their new equipment. With the hot plant smoke still rolling behind, conveyors come out in just a few minutes to ready the duplex gravel plant for its next move

Portable plant

continued . . .

ers were used only for crushing. The crushing section turned out up to 175 tph. even though the pit material required 60-75 percent crushing, chiefly because of the unbalanced ratio of the small middle sizes. The product met specifications so well that it was dumped by conveyor directly into the dryer drum of the asphalt plant.

Crusher maintenance was held to a minimum. The jaw crusher plates showed no appreciable wear in this first 32,000-ton job. Roll crusher maintenance consisted only of weekly buildup of the shells by electric welding. The plant had been shipped with one smooth shell and one corrugated shell in the roll-crusher unit. Performance was increased by filling the troughs of the corrugated shell with welding rod and filler metal, and operating both shells smooth.

Portability of the plant was a beneficial factor. After completing the first job two weeks ahead of schedule, the crusher was dismantled on a Friday. It was moved 150 miles to the next setup on Saturday, and was ready to go again at Monday noon on a small 4,000-ton job. Company officials know from firsthand experience on the first job that the portable plant will produce economically high-spec aggregates in amounts needed to meet the production rate of their asphalt plant. One of

Please turn to page 118





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Enter 1241 on Reader Card

*Used successfully in the steel industry,
this method deserves careful study
by the cement industry*



Oxygen enrichment of primary air can improve kiln production

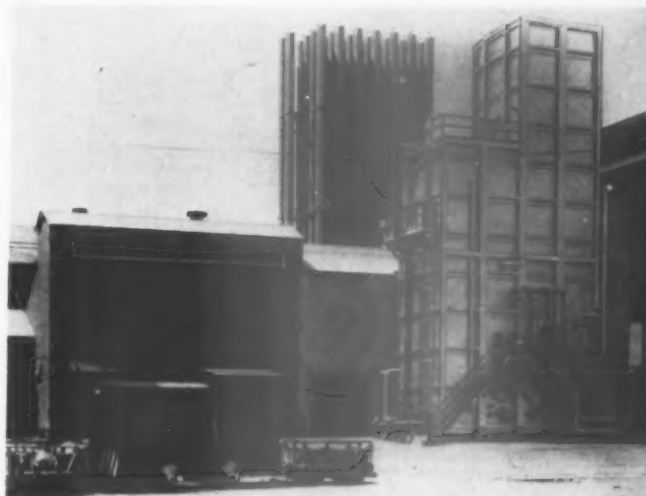
by Martin J. La Velle*

OXYGEN ENRICHMENT of primary air in cement kilns—a process similar to one successfully used in steel mills—offers an untapped potential for increasing kiln production. Since any improvement at this pivotal point is bound to be reflected in over-all plant efficiency, this method of adding to the productive capacity of kilns deserves the careful study of the cement industry.

The over-all efficiency of any cement plant has always been judged by the efficiency of the burning process. When you stop to consider that the cement kiln is the focal point of almost all the raw materials used in the plant, this is understandable and basically logical.

In the steel industry, the process of enriching the air supply to open hearth furnaces has been practiced in Germany for some time. After the war, German metallurgists working in this country introduced the idea to American steelmaking with very impressive results. Faster heats, as well as a purer product, were obtained in open hearth furnaces. Since then, the swing to enrichment with oxygen has been accepted by almost all steel manufacturers.

When you consider that the most prominent limiting factor in cement kiln production is the problem of burning enough coal to liberate sufficient heat for calcination of an established amount of raw feed, you can appreciate the value of additional oxygen. It is no major problem to increase the supply of coal and raw feed to the kiln. The real difficulty is supplying the amount of air required to burn the extra coal needed to calcine the



This pressurized oxygen generating plant is employed "on site" in a steel mill. Oxygen here is used for burning carbon out of iron in steel making

additional raw feed. And the added air must be supplied without upsetting internal conditions in the kiln.

Let's take a closer look at this problem of supplying additional air. With the advent of forced air movement in cement kilns, greater productivity was achieved because more coal could be burned than in natural draft kilns—and for more consistent periods of time. A point of diminishing returns was reached, however, when the resulting higher air velocities from forced-air fans introduced two important disadvantages:

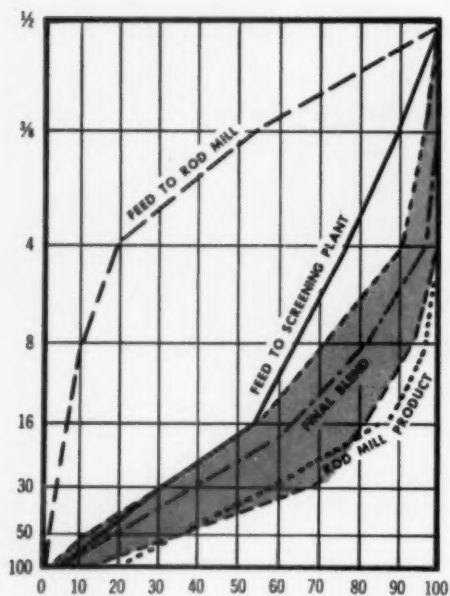
—In order to benefit from the additional oxy-

Please turn to page 100

*Plant Engineer, Sandt's Eddy Plant, Lehigh Portland Cement Co., Easton, Pa.

KENNEDY ROD MILLS produce

Owners and operators are unanimously enthusiastic over the performance of KENNEDY Rod Mills in the manufacture of sand. The simplicity of the circuit, the ease and low cost of upkeep and the ability of the KENNEDY Rod Mill to produce large tonnages of sand which meets the most rigid specifications are among the important qualities which make KENNEDY Mills outstanding in this operation.



This screen analysis, made during a production run of a KENNEDY 4 x 10 Rod Mill circuit, shows how effectively the final blend meets specifications.



Consult KENNEDY for full information on the production of sand with the KENNEDY Rod Mill.

specification sand at less cost

◀ Dan Grow, Plant Manager,
Refractory Sand Co.,
Andreas, Pa.

"We are called upon to make unusual specification sands by the various refractory companies. Without our Kennedy Rod Mills this would be an impossibility. For versatility and reliability you can't beat a Kennedy Rod Mill."

John H. Mowery, ▶
Plant Manager,
Central Builders Supply Co.,
Sunbury, Pa.

"We are constantly amazed at the high capacity our Kennedy Rod Mill gives us at the exact gradation we want."



◀ Neal McMullen, President of
Sheesley Minerals, Inc.,
Kunkletown, Pa.

"We are one of the very few companies in our area capable of making sand to the rigid State specifications. Our Kennedy Rod Mill is, in large measure, responsible for this ability to produce and hold gradation. We investigated thoroughly before buying and are now certain it pays to own the best."

Dr. L. T. Hempt, ▶
Hempt Bros.,
Camp Hill, Pa.

"We have tried other methods of manufacturing sand, but experience has proved to us that processing in a Kennedy Rod Mill is the only economical way to do it. Kennedy Products are good and Kennedy Service is even better."



KENNEDY VAN SAUN

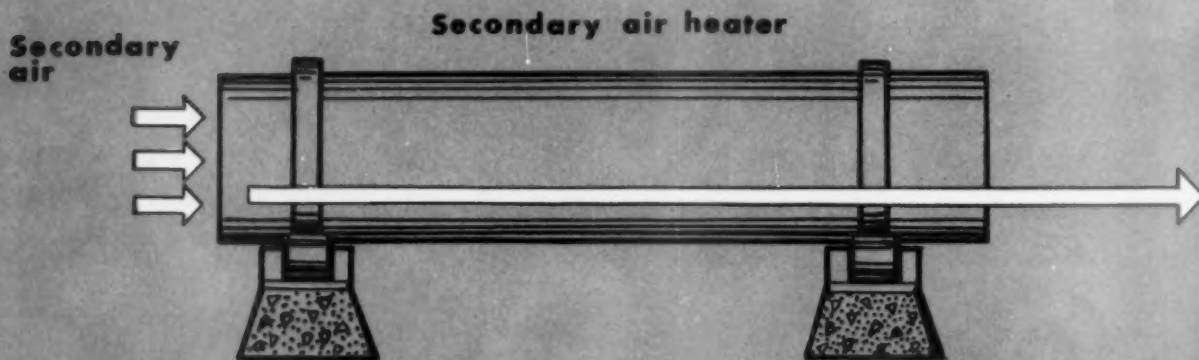
MANUFACTURING & ENGINEERING CORPORATION

405 PARK AVENUE, NEW YORK 22, N. Y. • FACTORY: DANVILLE, PA.

• Mechanical and Pneumatic Conveyors • Complete Crushing, Lime, Cement & Carbon Paste Plants • KENNEDY Research & Testing Service.
Enter 1242 on Reader Card

ROCK PRODUCTS, March, 1959

Here's one possible arrangement for adding



Oxygen

continued from page 97

gen, the kiln was forced to accept four molecules of nitrogen for every extra molecule of oxygen. The relative merit of nitrogen under these circumstances of heat transfer is negligible.

—Since the velocity of the air through the kiln increased, the dust-carrying capacity of the flue gases increased, too. The result was a greater dust load in the kilns and, consequently, lessened material efficiency due to recycling load and dust losses.

To be able to evaluate the seriousness of this first disadvantage, you have to remember that both nitrogen and oxygen in the elemental or uncombined state are considered transparent to radiating heat, having a minor heat-carrying capacity when compared with water vapor or carbon dioxide. Since rotary kilns are primarily a device for transferring heat by radiation, it is not in the best interests of efficiency to introduce gases that have poor radiant heat transfer properties.

There is ample justification for the presence of oxygen because of its role in the combustion of coal and its consequent formation of carbon dioxide. Nitrogen, however, has no such redeeming qualities; its presence is tolerated, not enjoyed. The end result is that with increased air, a greater amount of heat is being used to raise the sensible heat of a gas not essential to calcining raw feed.

The conclusion is, then, that higher air velocities superficially serve the purpose of increasing kiln production by increasing the amount of oxygen, but decrease the efficiency of the heat transfer between the clinker and the burner pipe flame because of the additional nitrogen introduced.

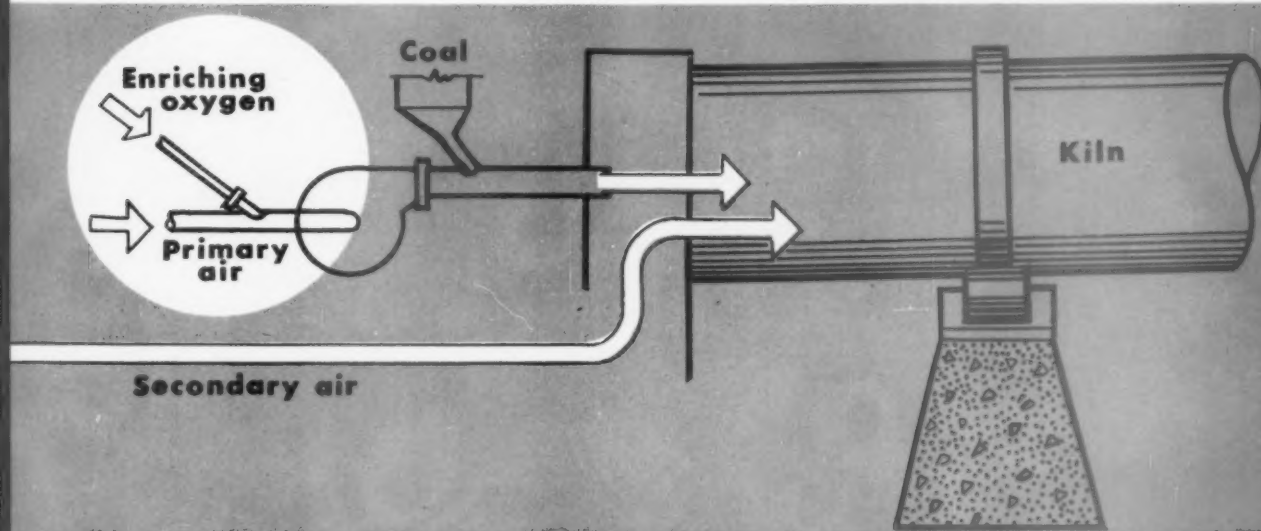
The second disadvantage of forced air shows up when kilns develop mud rings. The amount of dust gathered by the dust collector invariably increases when rings form, and the annular constriction serves to increase air velocities as the fan strives to compensate for the smaller cross-sectional area through which it must draw its rated quantity of air. Result of this increased velocity is an increased dust load.

Seriousness of this problem depends on the method of dust handling at the individual plant. The economic aspect of an increased dust load in any plant could never be considered favorable. This would be true even in a plant with 100 percent dust-collection efficiency — even if it were attainable.

The basic fact prevails that ideal materials-handling efficiency demands no loss of materials and a single-cycle heat exchange between burner pipe and raw materials. So it is self-evident that additional velocity of air adversely affects material efficiency through dust losses and multiple cycling, by increasing the dust-carrying capacity of the kiln gases.

Now that we've established the fact that addi-

oxygen to the primary air in a cement kiln



tional oxygen is beneficial to increased kiln production, while excess air is detrimental, you can readily see how oxygen enrichment could further increase kiln production.

Take the hypothetical case of a kiln where approximately 4,800 cfm. is being supplied as primary air. This represents a normal 25 percent of total combustion air, or 25 mols. of primary oxygen to 100 mols. of total oxygen. Since 25 mols. represent only 20 percent of the total volume of primary air, 100 mols. of nitrogen would be present. By displacing all the nitrogen in taking our primary oxygen from an oxygen generator, we would now supply 200 mols. of oxygen for the total oxygen supplied per unit time. And, most important, there would be no increase in velocity of air through the kiln.

Theoretically, we would then be able to burn twice as much coal and produce a similar increase in clinker. Other limiting variables would undoubtedly prevent us from achieving a 100-percent increase, but even 10 percent—a realistic figure—would be reflected favorably in plant operating costs.

In these times of shifting markets, additional production capacity may not be considered desirable by some producers, but other specific benefits could be realized. Production units could be idled and labor and maintenance costs reduced, while still maintaining rated plant capacity.

Savings through increased material efficiency

would also be attractive, since oxygen enrichment would permit operation of kilns at lower than normal drafts. The gain here would be made through lower dust losses, without sacrificing normal production standards.

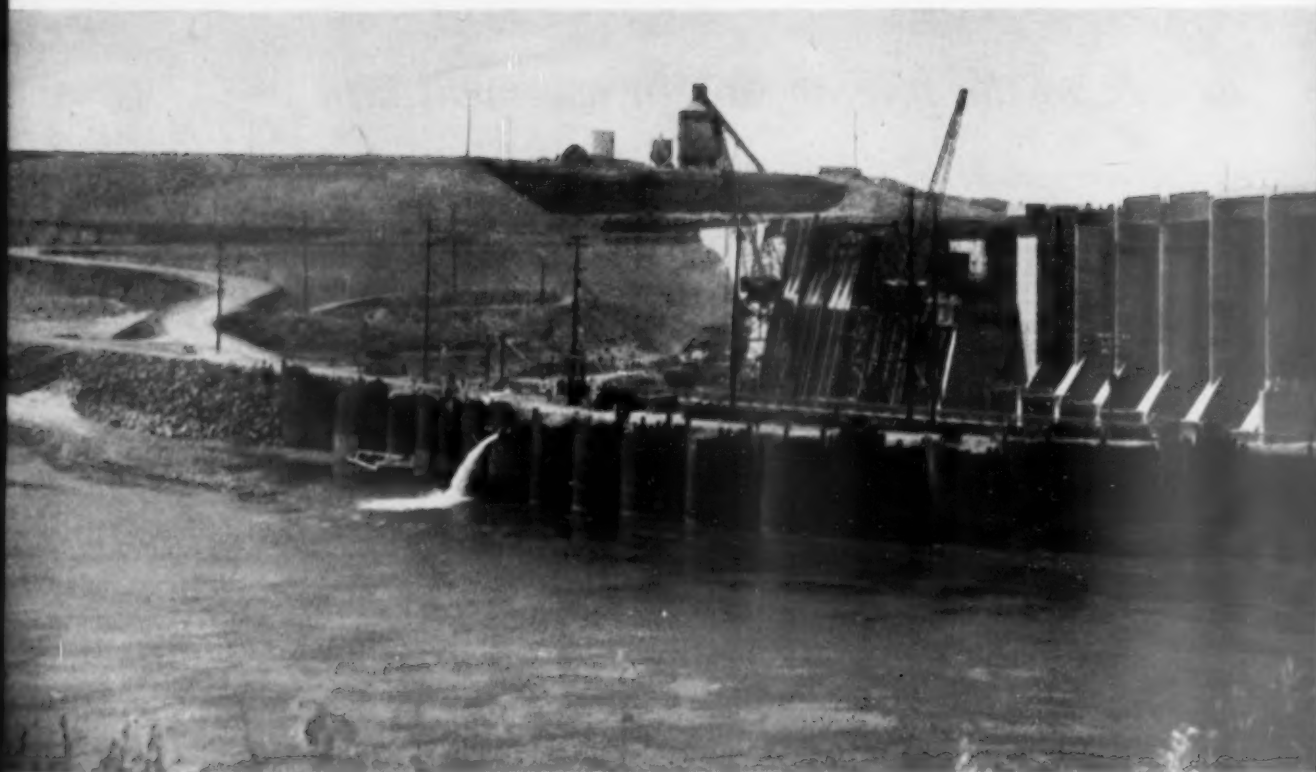
Not to be overlooked is the possibility of increasing production without capital outlays for more kilns and coolers.

Although we could not claim the advantage of cheapening the production costs of a high market-value commodity like steel as justification for oxygen enrichment, in cement production there seems to be enough reward in savings through greater mill efficiency and reduced plant overhead to warrant further investigation of the process.

The cost of oxygen generators at this stage of development could hardly be classed as a minor expenditure; but considering the amount of money the average cement plant has tied up in dust collection equipment, the cost does not seem prohibitive. In view of the potential market, it is also possible that the design of generators could be improved to the extent that a more attractively priced unit could be offered to the industry.

It is quite conceivable that any increase in production efficiency would broaden the slim profit margin of cement while offering a more competitively priced commodity to the market. The first step toward increased production efficiency in this field is the application of basic research to the subject of oxygen enrichment.

END



About 1.2 million cu. yd. of concrete is being used in dam which will form lake 103 ft. above river level

Big classifying job means special

Curtis Construction uses trommel, scalping tank, sizer, crusher, screens at Ice Harbor Dam job

THE LOW CEMENT CONTENT of the concrete going into Ice Harbor dam near Pasco, Wash., demands extremely accurate gradation of the aggregates, especially sand. To meet this need, Curtis Construction Co. has assembled an impressive array of washing and sizing equipment five miles from the dam site.

Roughly 1.2 million cu. yd. of concrete will be batched before the dam's completion, currently scheduled for 1961. The builders started out using a 2-bag mix for the concrete, without pozzolan additives, but later switched to 2½ bags and used an air-entraining agent.

Ice Harbor is the first of four authorized dams on the lower Snake River. These dams will ultimately extend slackwater navigation from the confluence of the Snake and the Columbia—a few miles below the Ice Harbor site—to Lewiston, Idaho, 150 miles upstream.

The winding Snake River drains a tremendous area, including Wyoming, Montana, Idaho and a small part of Washington. Flash floods and seasonal thaws occasionally send torrents of water rushing down the river, and the goal of the U. S. Army Corps of Engineers' overall project is to harness these waters to even out the power potential of the Northwest.

Ice Harbor dam will have an initial hydro-electric capacity of 270,000 kw. and an ultimate capacity of 540,000 kw. It is not a high dam; the level of the lake it will form will be 103 ft. above the water in the river. The reservoir behind the dam will extend 35 miles upstream to the second proposed Snake River dam, Lower Monumental. Overall length of Ice Harbor dam will be 2,790 ft. The dam is being built at a cost of \$135 million.

The 450 to 475 tph. aggregate plant was designed and built by Curtis Construction Co., a



equipment

by Walter B. Lenhart

Spokane firm that is also supplying the sand and gravel for Rocky Reach dam on the Columbia River. (See **ROCK PRODUCTS**, December, 1958, page 110.)

Here are the plant's outstanding features:

A 3-cu. yd. shovel handles the excavation of raw materials in the pit, loading a fleet of four dump wagons. Very little stripping is necessary. After the short, easy haul to the plant, the wagons unload at a feed hopper. Since the deposit is short on sand in the 30 to 50-mesh range, sand is trucked from another pit and unloaded into the same hopper.

This technique contrasts with the practice at Rocky Reach, where trucked-in sand is stored in a surge pile and fed to the main stream as required. But at Ice Harbor the total amount of sand in the pit is in excess of requirements, so a



This 4 x 20-ft. rotary trommel removes dry sand first, then minus 6-in. gravel. Jaw crusher receives plus 6-in. gravel



Load-out tunnel, belt and truck-loading bin are provided for each size of aggregate, which is carried five miles to dam



Sand sizer, two rake classifiers process sand before it is stored over reclaim tunnel used to blend sands



A 3-cu. yd. shovel and four pit wagons handle material first

Ice Harbor

continued . . .

dry sand can be scalped out at the first operation and wasted.

A vibrating feeder under the truck hopper transfers the pit run to a belt conveyor. First stop is a dry rotary trommel that is equipped with a short outer sand jacket. Through material from this sand jacket is wasted or sent temporarily to a sand surge pile. A minus 6-in. gravel is also produced by the trommel and conveyed to a surge pile. Plus 6-in. gravel is broken in a jaw crusher—the only crusher in the plant. Crusher product joins the minus 6-in. gravel to be conveyed to the surge pile for this size.

Sand is conveyed from its surge pile to a double-deck wet screen, the first deck of which serves only to protect the second. Through-screen material from the second deck passes to an eight-spigot sand sizer. Under the sizer are two small rake dewatering units producing two sizes of sand, which are stored separately over a reclaiming belt system. Sand recovered from the gravel operation is stored in another pile over the reclaim tunnel.

This reclaiming belt system in the tunnel is essentially a blending operation. The three sizes of sand are fed to the reclaim belt in the proportions required to meet the specification. To insure accuracy, weighing feeders are installed under two of the sand piles. The third sand size is fed by gravity. After blending, the sand is stockpiled for 72-hr. drainage.

A vibrating feeder under the minus 6-in. surge pile puts this material on a conveyor leading to a single-deck wet screen where the gravel is separated into plus and minus 3-in. sizes. The 6 x 3-in. material is conveyed to storage while minus 3-in.

gravel goes to the final screening tower. En route to the tower the material is weighed over a third continuous weighing device. At this final tower any excess bird's eye gravel can be screened out and trucked to waste.

Any sand remaining in the system is recovered later in a sand clean-up operation. This recovered sand is sent to a six-spigot water scalper; final dewatering takes place in a large rake unit.

Sand and four sizes of gravel—6 x 3 in., 3 x 1½ in., 1½ x ¾ in. and ¾ x No. 4—are stored on the ground. There is an individual reclaim belt under each pile. Rock ladders are used for storage of the two larger sizes of finished material.

Sand and gravel are hauled from the plant to the construction site in "trains" that carry as much as 44 cu. yd. per trip. The "train" consists of a hopper-bottomed truck holding 33 cu. yd. and a trailer with a 12-cu. yd. capacity. Most of the hauling is done at night over a private road that crosses a paved state highway. Traffic signals at this intersection are operated by electric eyes that function whenever one of the haulage trucks passes.

END

MAJOR EQUIPMENT USED BY CURTIS CONSTRUCTION CO., PASCO, WASH.

Shovel, 3 cu. yd.	Manitowoc Engineering Corp.
Pit wagons, EW-15 (4)	Caterpillar Tractor Co.
Primary feeder	The Jeffray Mfg. Co.
Trommel, 48 in. x 20 ft.	Link-Belt Co.
Jaw crusher, 20 x 36 in.	Pioneer Engineering, Div. of Poor & Co.
Screens, 4 x 12 ft., two-deck, wet (2)	Simplicity Engineering Co.
Sand sizer	Dorr-Oliver, Inc.
Dewatering units, two-rake	
Vibrating feeder	Syntron Co.
Final screens	Simplicity Engineering Co. (2) Allis-Chalmers Mfg. Co. (2)
Water scalper, 6 spigot	
Dewatering unit	Eagle Iron Works
Continuous weighing units (3)	Dorr-Oliver, Inc.
Tractor-doxer	Merrick Scale Mfg. Co.
Plant design & construction	Caterpillar Tractor Co.
Plant-to-dam-site haulage units	Curtis Construction Co.



"We added a second Deister Screen when we saw what our first one could do..."

says Wyandot Dolemite

Although Wyandot's screen processing plant at Carey, Ohio is only seven years old, the company puts special emphasis on its continuous modernization program. In 1957, for example, Wyandot was having trouble with carryover in recovering #9 stone from surplus fines. The vibrating screen then in use was replaced by a single deck 3' x 6' Deister Type ETU equipped with 1/4" screen cloth opening.

The results, according to George Taylor, Plant Superintendent, were more than satisfactory. "We haven't had a bit of trouble getting our sizes," Mr. Taylor says. "This little Deister is a big capacity screen that produces clean #9, and our regular check tests prove its accuracy in holding fines and

meeting close specifications."

Wyandot's success with this unit prompted them to install a second Deister — a triple-deck 5' x 14' Type UHS. Screen openings are 1 1/2" for the top deck; a combination of one 3/4" strip and one 7/8" strip for the middle deck; and 1/2" for the bottom deck. In operation since December, 1957, this heavy-duty screen has handled about 1200 tons per day.

"The way these Deister Screens have performed for us," says Mr. Taylor in summing up, "we wouldn't hesitate to recommend them to any aggregate producer." Coming from a man who has worked with vibrating screens for 33 years, this is a significant praise indeed.

Whether your problem is expanding

to meet increased production requirements . . . or modernizing to lower production costs . . . the advantages of Deister Vibrating Screens should be carefully weighed before making a final decision. Consider the benefits of such exclusive Deister features as Adjustable Slope Panels (independently adjustable at both feed and discharge ends) . . . Unitized Lifetime Vibrating Mechanism . . . and Opposed Elliptical Throw to control material movement for greater sizing speed and accuracy. Inquiries concerning special screening problems will receive prompt attention.

DEISTER MACHINE COMPANY
1933 East Wayne Street, Fort Wayne 4, Ind.





Only quarry unit needed to lay bare scoria in mountain and push cinders to crusher hopper is a crawler dozer

Mining scoria here is a snap

A HIGH, ROUNDED VOLCANIC MOUNTAIN dominates the landscape north of the desert town of Winona, Ariz., near Flagstaff. Here a strong light-weight aggregate is being mined and processed by the Superlite Builder's Supply Co. of Phoenix.

The volcanic cinder crushing and screening plant at Winona is the newest addition to Superlite's extensive operations, which now include concrete block and roof slab manufacturing, pumice washing and screening and diatomaceous earth plants in California and Arizona.

The mountain, two miles north of Winona, is a great mass of volcanic cinders or scoria, jet black and sharp. The processed scoria weighs 46 lb. per cu. ft. At the present 12 cars per day, enough scoria is available for 100 years production.

Mining and processing of the material are very simple. A tractor equipped with a dozer blade is used to push away a thin layer of overburden, mainly desert growths and brush. Because the raw

material is only slightly consolidated, the same tractor pushes the scoria to a hopper. Under the hopper is a belt feeder which serves an 18 x 36-in. jaw crusher, set to deliver a minus 3-in. scoria. A flat belt conveyor delivers to a three-deck, 4 x 16-ft. vibrating screen.

When shipments are being made to the company's Phoenix plant, the screen is bypassed. At Phoenix, there is a second processing plant for re-crushing and screening the scoria as required. The minus 3-in. scoria is loaded directly into open-top gondolas. The plant is near the main East-West line of the Santa Fe Railroad.

A smaller tractor is used for car-spotting at the scoria operation. The plant, which handles 250 cu. yd. per hr., was built by the company staff under the direction of Robert Mizer, general superintendent for Superlite.

The company formerly obtained volcanic cinders from a deposit near Ash Fork, Ariz.

END

Plant consists of crusher, off to right, plus screen at right and belts leading, left, to car loading, and center, to plant storage. Much scoria goes directly to Phoenix block plant





PROJECT PAYDIRT *pays off for you again*

BIG NEW CAT No. 14 TURBOCHARGED MOTOR GRADER



PROJECT PAYDIRT:

Caterpillar's multi-million-dollar research program—to meet the continuing challenge of the greatest construction era in history with the highest production earthmoving machines ever developed.

ENGINE HP (rated at sea level)—150.
WEIGHT—29,280 lb.

BLADE, standard—12 ft.; optional—14 ft.
TRAVEL SPEEDS, 6 forward and 2 reverse—2.6 to 21.6 MPH.

TIRES, all around—14.00-24.
TURNING RADIUS—36 ft.

IN THE new No. 14 Series B, Caterpillar brings you the most versatile grader in the "big machine" field. Another major achievement in "Project Paydirt," the grader answers your need for a giant unit that comes through dependably with higher, faster, lower-cost production for you on today's big jobs.

The first and only Turbocharged motor grader, the 150 HP No. 14 operates at highest practical working speeds with either a 12-ft. or 14-ft. moldboard. It incorporates the latest engineering advances developed by Caterpillar research with exclusive time-tested Caterpillar features. Some are shown here, but there are many more. They all pay off

in this one fact: You can use the No. 14 profitably on—

- power applications like heavy spreading, ditching, grading and bank sloping.
- control applications like light spreading, fine grading, blading and maintenance.

As a result, this big all-purpose grader will earn its keep on every job with high capacity and low operating cost. But see for yourself. Get the complete facts about the No. 14 from your Caterpillar Dealer. Say when and where—he'll demonstrate!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

ADVANCE FEATURES OF THE NO. 14

PREC-O AUTOMATIC BLADE CONTROL: Another Caterpillar exclusive, optional on the No. 14. Operator selects desired slope on dial. Now transistorized for freedom from maintenance and adjustment, the unit automatically maintains blade slope within $\frac{1}{8}$ in. in 10 ft.

EXCLUSIVE OIL CLUTCH: Provides up to 2,000 hours' service without adjustment,

equal to about 12 months' "adjustment-free" operation.

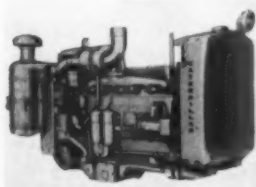
POWER STEERING AND POWER BRAKES: Provide fast, positive response and ease of operation that help operator maintain high production anywhere.

TUBELESS TIRES—14.00-24 (10-PLY RATING): All tires are mounted on wide 10-in. rims to

stiffen tire side-walls and reduce tire "roll." Large tires on front end improve machine stability.

EXTRA STRENGTH FRAME: Heavy frame, drawbar and circle are ruggedly built to match engine power.

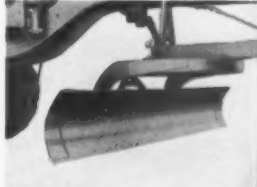
UNEQUALED VISIBILITY: An operator, while seated, has an unobstructed view of all the critical areas at the front wheels, blade toe and circle.



TURBOCHARGED CAT ENGINE: First and only Turbocharged engine in a grader. Engine provides high 18% torque rise.



NEW DRY-TYPE AIR CLEANER: Removes 99.8% of all dirt from intake air during every service hour. Can be serviced in 5 minutes.



HIGH THROAT CLEARANCE: New design permits increased clearance between moldboard and circle for greater loads.

CATERPILLAR

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**DIESEL ENGINES • TRACTORS
MOTOR GRADERS
EARTHMOVING EQUIPMENT**

**BORN OF RESEARCH...
PROVED IN THE FIELD**

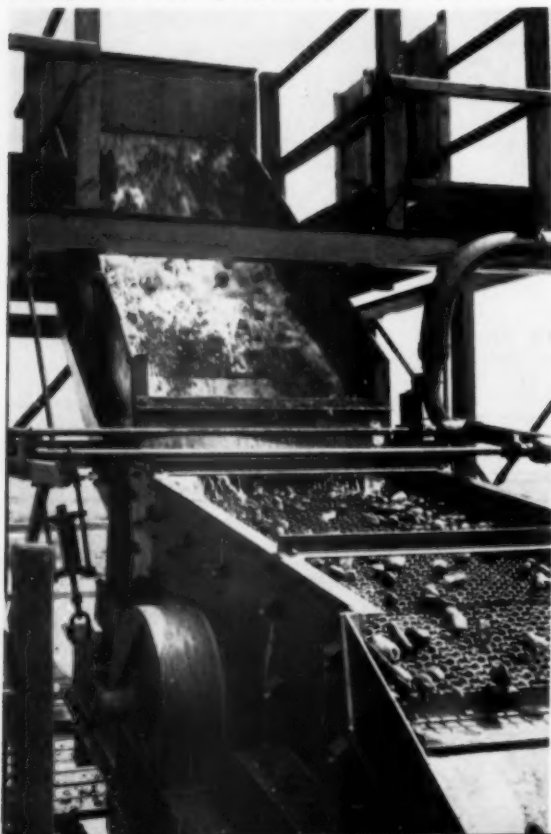


General view of plant shows, right to left, primary and secondary screening towers and sand plant

British plant boasts flexibility

Sand and gravel produced in many sizes, crushed or not

Primary tower has boiling box, static grid, vibrating screen



THE ACCENT IS ON VERSATILITY in a sand and gravel plant owned and operated by Folkestone Quarries Ltd. of Folkestone, England. One of the most modern plants in Great Britain, it is designed to deal with a wide variety of products.

Raw material is pumped into barges from an underwater deposit and transported to the bank. There it is extracted by secondary shore-based pumping units and delivered through a pipeline to a boiling box about 35 ft. above ground level.

From the boiling box, the mixture of sand, gravel and water passes to a static grid. This separates gravel from the water and sand, and delivers it to a 4 x 8-ft. triple-deck vibrating screen. The sand and gravel passing through the grid joins that through the bottom deck of the screen and is piped to the sand plant. Alternately, it may be diverted to one of two concrete bins to be joined by minus $\frac{3}{4}$ or minus $1\frac{1}{2}$ -in. gravel from the screen, to produce $\frac{3}{4}$ x 0 or $1\frac{1}{2}$ -in. x 0 all-in natural material if required.

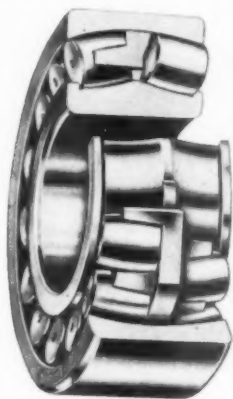
Oversize from the screen feeds two impact breakers and can be joined by the minus $1\frac{1}{2}$ -in. material as the occasion demands. The $1\frac{1}{2}$ -in.

Please turn to page 118

SKF engineering solves major bearing problems

NEW SCREEN BEARING OFFERS THE CAPACITY AND FATIGUE LIFE NEEDED TO BOOST VIBRATING SCREEN PRODUCTION

Designers and users of vibrating screens continually look for ways to increase operating capacity. Their requirements create a special bearing problem—because of the combi-

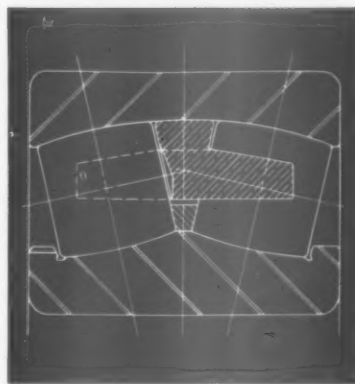


This is the new **SKF** screen bearing, now being produced in the fourteen most widely-used sizes.

nation of high loads and eccentric motion to which the bearings are subjected.

A new screen bearing, developed by **SKF**, solves the problem. This bearing has the long rollers and high capacity of the "C" type spherical roller bearing **SKF** introduced in 1953. It provides 40% greater load-carrying capacity and 3 times longer fatigue life than previous types. And its specially-designed cage withstands the high eccentric motion peculiar to vibrating screens.

This cage is made of centrifugally cast bronze and has axially drilled and reamed pockets of a shape closely conforming to that of the rollers. Its spherical OD conforms to the contour of the outer ring sphere. This provides greater cage contact area, thereby reducing the unit stresses. It also eliminates lub-



Drawing shows long rollers and close relative conformity of roller contour to ring contour in screen bearing design.

rication problems as the cage is supported in the outer ring's spherical surface where ample lubrication is available. This cage is symmetrical and one piece construction assures dynamic stability.

5911

The new bearing is interchangeable with **SKF** 223 Series bearings used on screens in mines, quarries, steel mills, chemical and paper plants. For full details, send for Catalog No. 466. Write or call the nearest **SKF** distributor, sales office or **SKF** Industries, Inc., Philadelphia 32, Pa.



Spherical, Cylindrical, Ball, and **Tyson** Tapered Roller Bearings

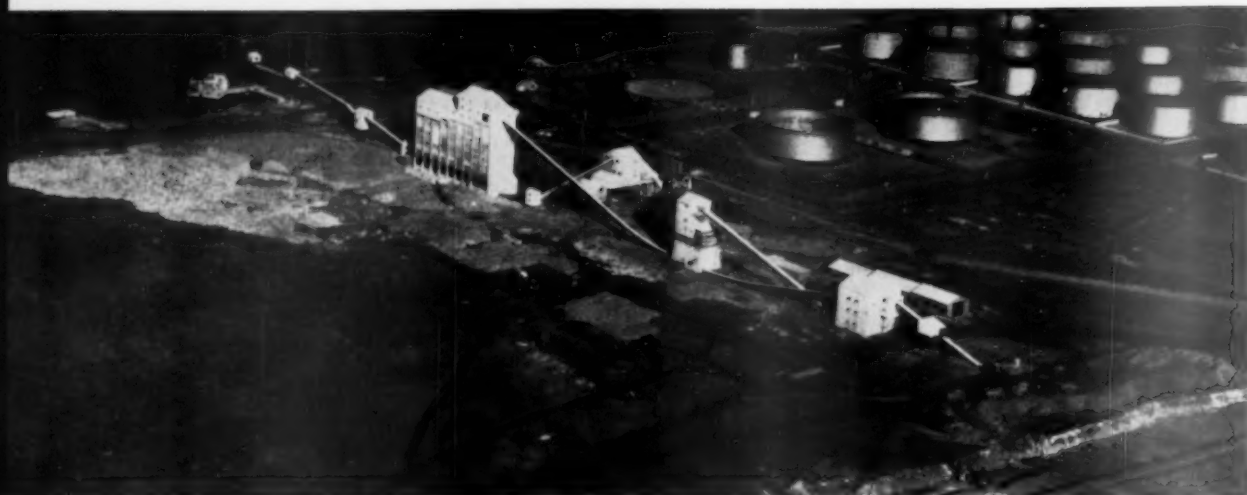
EVERY TYPE—EVERY USE

SKF

SKF INDUSTRIES, INC. PHILADELPHIA 32, PA.

* REG. U. S. PAT. OFF.

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Aerial view shows straight-line design processing arrangement beginning from slag pits to ship loading dock

Automated slag plant follows straight-line design

with companion coating plant placed at right angles

BIGNESS IS NOT THE ONLY BOAST of Great Britain's largest blast-furnace slag crushing and screening plant which went into operation late in 1957 at Teesport on the east coast of England. Automatic control is utilized for all operations, and the latest advances in asphalt coating-plant design have been incorporated in a companion plant to achieve consistent accuracy. The new plant, operated by Tarmac Roadstone Ltd., is designed to process 15,000 tons of blast-furnace slag per week.

A minimum of labor is employed in the plant. The crushing and screening section can be controlled by a foreman and four workers, one each at the feed hopper, mill house, selector screen and main screening unit. Two more men are required for the operation of the coating plant—one for the two units for grading, heating and mixing, the other at the truck-loading bays.

The most noteworthy general design factor is the selector screening units. Primary screening is performed here, and any excess quantity of specific fraction is returned to the mill house for re-crushing. The complex sequences of operations carried out in the coating plant are all centrally controlled.

by Leo Walter

Production begins with molten slag from the nearby Dorman Long Ltd. steelworks. The slag is poured into prepared pits, and when it has cooled, excavators place it in trucks for transport to the 50-ton mill-house hopper. After scalping, the material drops into a 5½-ft. cone crusher. Crusher product passes on to the selector unit. From the final screens, 10 separate sizes are fed into the 10,000-ton concrete storage bins.

The processed dry slag, ranging in size from 1/8 to 4 in., can then be handled in four ways. First, it can be loaded dry in specific grades for transport by truck, finding use as surface dressing, dry stone base-course work, concrete aggregate and filter media. Next, dry slag can be loaded for rail transport and used as railway ballast. Third, it can be transported by sea to the south of England for use as an aggregate, and finally, it can be correctly graded and processed into coated macadam for shipment to nearby counties.

The plant, which has an output of up to 300 tph., is served by a well-planned conveyor system. The

Please turn to page 112

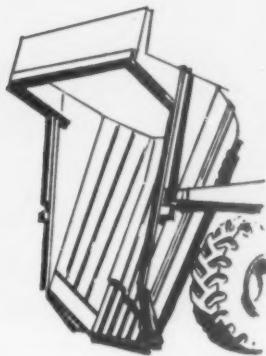
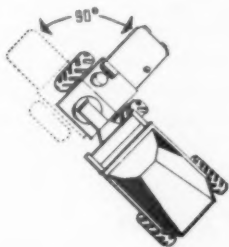
Haul problems?



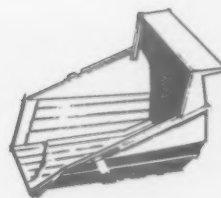
L-W Rear-Dump may be your answer!

No two hauling jobs are exactly alike. Each has its own particular problems. There are long hauls and short... all types of earth-born materials. Some jobs have restricted loading and dumping areas. Others tough grades, rough temporary haul roads. And there are wide variations in maintenance and repair problems—depending on loads, abrasive material, shock, weather, and available facilities and servicemen. So finding the *right kind* of hauler to solve your present and future problems isn't easy. That's why we think you might like to check these "problem-solving" features found only on LeTourneau-Westinghouse Rear-Dumps. All these special advantages of this off-road hauler are available on all three sizes: 11, 22, 35 tons load capacity... 138, 226, or 335 hp. And, to ensure steady earnings for you, other hauled units can be used behind same Tournapull® 2-wheel prime-mover. These include scrapers, bottom-dumps, flatbeds.

Faster spotting—Positive, electric power steer, through geared kingpin... pivots prime-mover to right angle for short 90° turns. As a result, unit makes continuous U-turn in less space than Rear-Dump's own length. In dump position, it turns in only about $\frac{1}{2}$ of over-all length! Result? You spot faster at the shovel... grizzly or hopper... and get away faster from congested pit or dump areas.



Easier loading—Wide bowl offers large "target" for easy-loading without spillage. Open rear of body provides wide, low entry for dipper—an extra speed advantage for your shovel.



Resist body shocks, damage—Rear-Dump stands up under heaviest loading jolts. Bowl is all steel—no wood fillers. Floor is lined with heat-treated tool-steel strips, welded to solid billets laid over heavy steel plate. Sloping sides deflect load shock, quickly cushion small floor area with layer of material against rock-damage.



Quick, positive dumping—Flick of fingertip switch on control panel instantly activates point-of-action electric hoist-motor. Body raises quickly to desired angle. At full dump position, edge of bowl is low behind rear wheels... material cannot roll forward to lodge against wheels, nor pile under rear end. Streamlined body sheds stickiest material readily. Front-wheel drive keeps power and traction on solid footing—well ahead of rear wheels—when dumping over high banks.

Hauls anywhere—Machine's big, low-pressure tires—5 to 6' tall, $1\frac{1}{2}$ to 2' wide—"float" machine over sand, mud, rocks, RR tracks, or other obstacles. Broad tire-lugs maintain traction in any type of material. Power-transfer differential puts up to 80% of power on drive wheel with firmest footing, when either powered wheel begins to spin. Electric pivot-turn, through geared kingpin, lets operator "walk" prime-mover out of soft spots. Dumping action can also be used to "hump" hauler off a soft bank.



Simplified construction—Look underneath a Tournapull Rear-Dump... note that this machine needs no springs, no tie rods, no hose and pipe lines, no frame, no long drive-shaft that require maintenance and repair. In place of a foundation frame and body sub-frame, Tournapull prime-mover and trail-unit are hitched together by means of a high horizontal yoke. Yoke pivots horizontally on kingpin at front... then extends back along side of bowl, where it pivots vertically just above and ahead of rear wheels. This vertical and horizontal kingpin arrangement provides an easy oscillating action that eliminates most twisting, tilting strains... permits higher speeds on uneven ground.

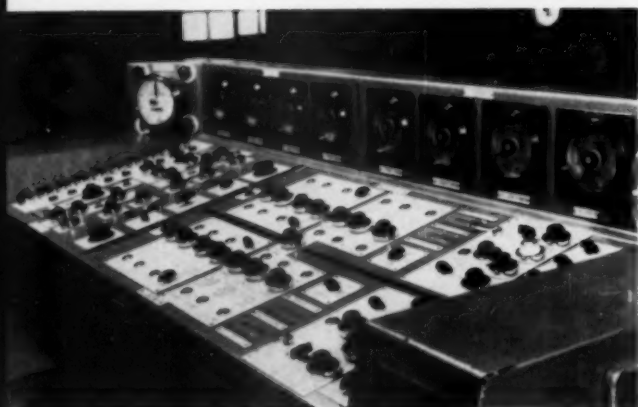
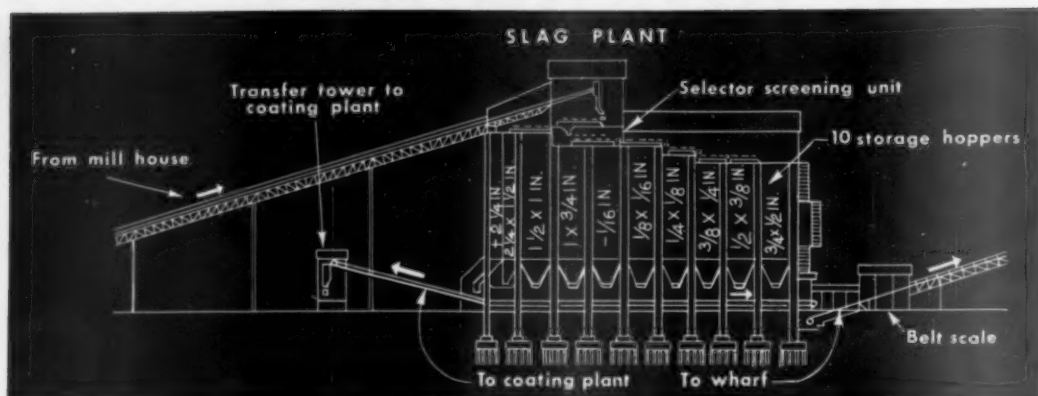
R-1852-G-1



LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit



The complex mixing operations in the coating plant are controlled from this desk.

Slag plant

continued from page 110

correctly graded material is fed at rates of up to 400 tph. to a retractable boom loader on a concrete jetty alongside which the receiving ship is moored. Berthing facilities are available for vessels of up to 3,000 tons capacity.

Crushing and screening are highly automated. A vibrating feeder on the 50-ton dump hopper is operated by remote control from the mill house. The slag moves by conveyor to the top of the mill house at a controlled rate of 300 tph., passing through a magnetic separator. In addition to the 5½-ft. cone crusher, two 4-ft. short-head cone crushers are installed in the mill house.

Material from the primary crusher is delivered to the selector screening unit which consists of one double-deck and two single-deck screens. The selector unit screens out and sends to the main storage hoppers only the material required for sale. The rest is sent back to the secondary crushers. Re-crushed slag is returned to the selector screens with the main flow of material.

Panels with push-button control and tonnage indicators are mounted next to each of the feeders of the selector screening unit. Below the selector unit is a compartmented storage unit. Each of the five compartments holds about 100 tons. Material stored here can also be returned to the secondary crushers. Final screening takes place on 14 single-deck horizontal vibrating screens over storage bins.

There are two outlets in the base of each of the 10 main storage hoppers. One delivery system supplies the loading wharf; the other delivers material to the asphalt plant.

The coating plant is placed at right angles to the main plant. It consists of two heating and mixing units, of 60 cu. ft. capacity each, set side by side. The graded batches of slag are conveyed from storage to a forked chute delivering into the weigh-hopper of either of two units that check-weigh the complete batch.

Then the sequence of operations is as follows: The batch passes, through a pneumatically operated gate, from the weigh-hopper to the heating drum. After heating, a pivoting-chute operated by an electric motor opens and transfers the batch to the paddle-mixer. If required, binder and flux are added here in measured quantities as a spray and, for some mixes, filler is added. The batch may be discharged from the mixer (the discharge door is also operated by an electric motor) directly into trucks or into one of three 20-ton capacity "mixed-material" hoppers. The set of three hoppers is mounted like an overhead traveling crane, one such traveling unit serving each mixer and crossing the loading bays.

The filler added at this stage is not produced in the main plant, but is brought in to supplement the fines already available. It is delivered by truck into a dump hopper and transferred by an enclosed flight elevator of 9 tph. capacity to a service hopper which has a chute serving each of the two

Please turn to page 116



With dozer blade (8 other attachments available), Tournatractor quickly cleans pit-floor around shovel. Rubber-tired tractor's high working and traveling speeds permit it to get around to scattered shovels more times per day... also to keep pit-floor, haul-roads, and plant area smooth and free of loose rock for high-speed, low-cost, safe operation.

Are rising costs for pit clean-up and maintenance cutting your profit margin?

With today's bigger pits and more widely-scattered operations, neglect of maintenance and clean-up can cut deeply into your profits. For example, it will increase haul costs... add impurities... and create an untidy pit that slows operations and invites accidents.

If you increase the number of your slow-moving clean-up tools, you add materially to operating costs. But there is an answer that will permit you to have a planned clean-up and maintenance program and also keep operating costs low. That is to put speed and mobility in this part of your operation. Here's a clean-up tool we think you should investigate — the high-speed LeTourneau-Westinghouse Tournatractor®.

This rubber-tired tractor can: (a) replace 2 or 3 crawler-tractors now handling pit-floor clean-up around your scattered shovels; (b) handle haul-road maintenance, construction and drainage problems to help your haulers travel at safe, profitable speeds; (c) help open up new areas of operation, build rail-beds, spot rail-cars, tow equipment; (d) clean-

up around plant area, dress and seal stockpiles; and, (e) handle miscellaneous tractor assignments anywhere on your property quickly and at low cost. Here are the facts that back these important claims:

"Go-anywhere" mobility

Speedy Tournatractor is never more than a few minutes away from its next assignment anywhere in your pit or plant area. This tractor always takes the shortest route — via rocky pit-floor, benches, down "shot" banks, over hard-surfaced roads, or cross-country. Unit's big, low-pressure tires do not damage air-drill hose lines, RR tracks, pavements. With rubber-tired tractors there are no delays or expense for flatbed loading and haul, even to a new work location many miles away.

Completes job faster

Tournatractor's 17 mph forward speed is more than twice that of comparative crawlers. Instant shift and high reverse speeds to 7.2 mph are important, too — since nearly 50% of your working cycle on do-

ing or pushing jobs is usually spent backing up. On scattered assignments, tractor's fast travel and working speeds increase output by 50% to 100% over the fastest crawlers!

Costs less to operate

With enclosed anti-friction drive and fewer moving parts, Tournatractor is better protected from grit and wear — will give you higher efficiency through more hard-working hours of continuous service.

Tournatractor rolls on only 4 rubber-tired wheels... compared to about 560 moving crawler track parts. In many materials, unit's big, pneumatic tires outwear tracks by as much as 2-to-1. In highly abrasive materials, tires often give up to 4 times the service of tracks.

Try Tournatractor in your pit

Why not let us arrange for a demonstration? Put Tournatractor to work in your pit, and see for yourself how this rubber-tired tractor can help out clean-up and maintenance costs. Write for full details.

CT-1680-QM-1



LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

3 reasons why you should specify NORDBERG GRINDING MILLS

1. Advanced Engineering

Nordberg mill design reflects significant technological improvements that may measurably affect your installation and operating costs. Sealed trunnion bearings; positive bearing lubrication; optimum life of wearing parts are among the features that will benefit you.

2. Quality Manufacture

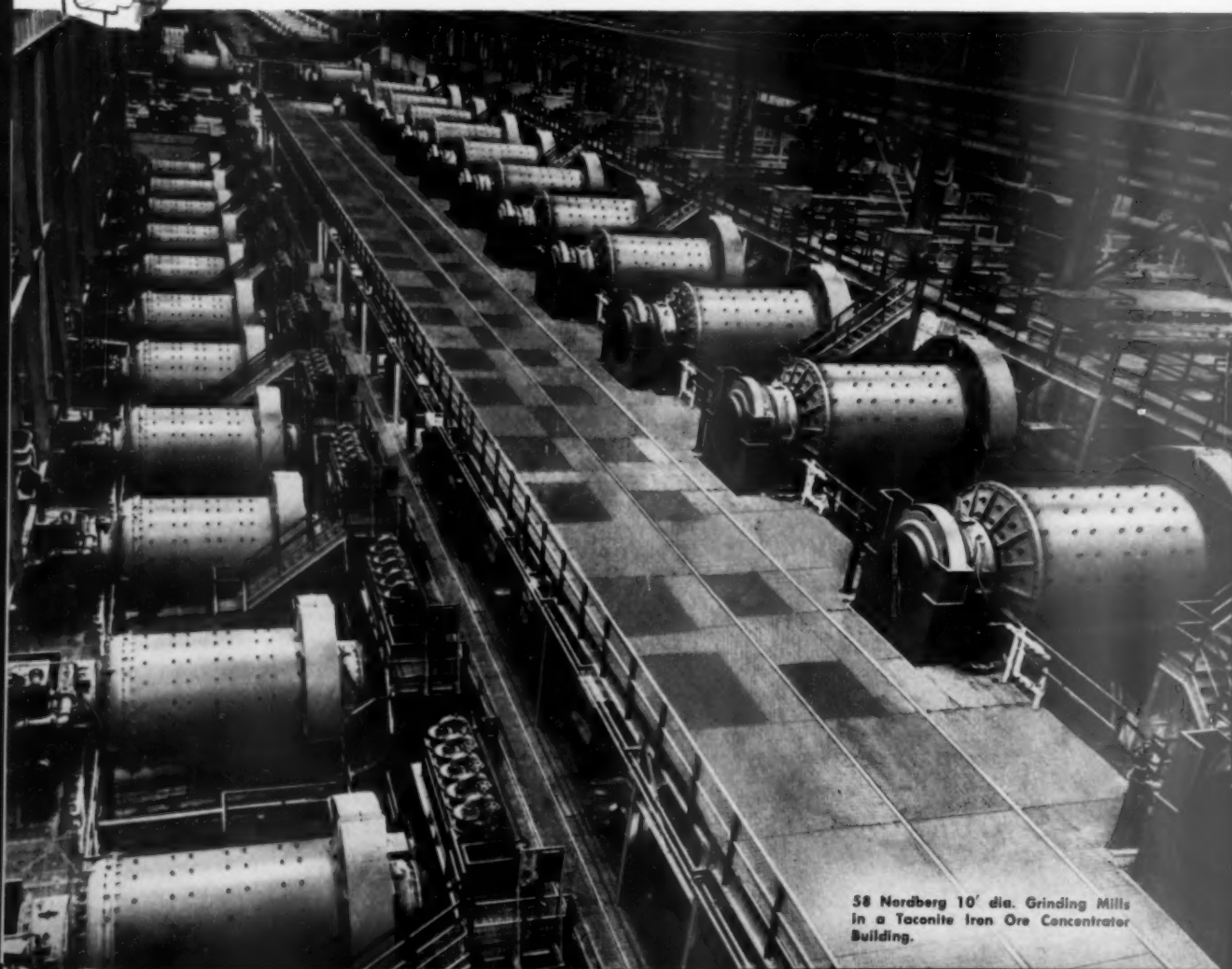
Nordberg Mills are (1) precision built to rigid specifications in shops renowned for (2) skilled manufacturing personnel, and (3)

modern machine tools and equipment to assure quality workmanship. Good reason why the name *NORDBERG* has always signified the *ultimate* in mining, quarrying and process machinery.

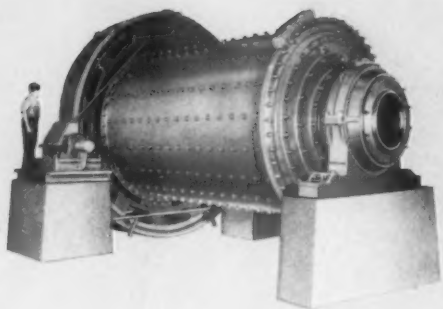
3. Dependable Operation

A team of experienced application engineers with a sound understanding of your milling operations qualifies Nordberg to serve you. More important, it assures you of the right machinery for the job . . . machinery that must be dependable and will continually produce to your specifications.

Nordberg Grinding Mills are built to meet specified conditions for wet or dry grinding—in the manufacture of cement; the fine reduction of metallic and non-metallic minerals; and in numerous other processes where friable material must be comminuted to fine sizes at low cost per ton. They are available with grate, overflow or peripheral discharge . . . and are built in sizes from 6 feet to 13 feet in diameter and up to 50 feet in length.

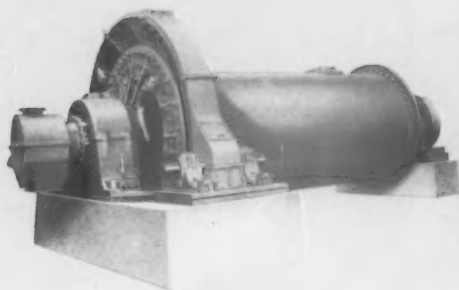


58 Nordberg 10' dia. Grinding Mills
in a Taconite Iron Ore Concentrator
Building.



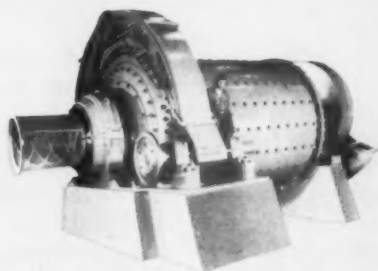
ROD MILLS

For the coarser or primary grinding stages of milling plants.



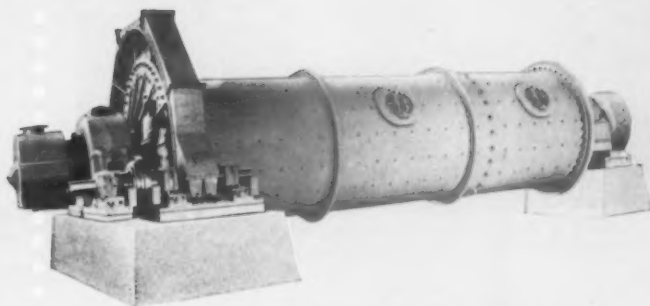
TUBE MILLS

These Nordberg units are used primarily where extremely fine grinding is required.



BALL MILLS

Having principal application in the fine grinding of ores, and minerals, and as preliminary mills operating in tandem or series with tube or compartment mills.



COMPARTMENT MILLS

For multi-stage grinding to ultra-fine specifications, these Nordberg Mills are built in lengths to 50 ft., with two, three, or more compartments.



BULLETIN 232 covers the complete line of Nordberg Grinding Mills for efficient, low cost processing of ores and industrial minerals. Write for a copy today.



BULLETIN 263 describes the advantages of using Nordberg "NI-HARD" for mill liners and other machinery components subject to rapid abrasive wear. Copy on request.

NORDBERG MFG. CO., Milwaukee 1, Wisconsin

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ENGINEER



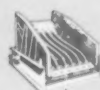
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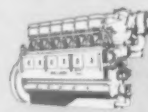
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NORDBERG ENGINES

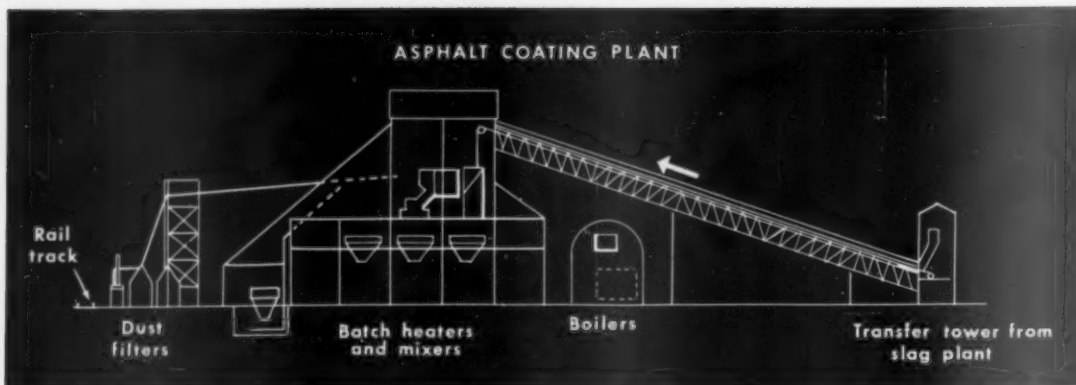


Photo courtesy Stothert & Pitt Ltd., Bath, England



The 5½-ft. cone crusher, left, and two 4-ft. short-head crushers reduce the slag to useable sizes

Slag plant

continued from page 112

mixers, with a capacity of about 2 tons available for each of them. A weigh-hopper weighs the given quantity of filler, which is then discharged into the mixer through a gate.

Various other services must be provided at the coating plant. Binder is heated in one 4,000-gal. and three 6,000-gal. heaters, and flux is stored in two 1,000-gal. tanks. These materials are metered automatically before they enter the mixers. Four binders are available; this enables the plant to produce material to any required specification.

An alternative method of operation utilizes the plant for the production of water-bound macadam, so water also can be added and metered in one of the mixers. Fuel oil is stored in two 1,000-gal. tanks, and again its delivery is controlled according to the heating cycle. A small compressor forms part of the plant, and provides air at 80 psi. for the pneumatic devices—binders and filler meters, and pneumatically operated gates.

Automatic control of the coating plant is complex. This brief outline indicates the various meas-

urements—batching, weighing, metering and temperature and time control—which must be made for each batch, and which may be varied from batch to batch. Further, if the two mixers are mixing different specifications simultaneously, the whole train of events must be protected by electrical interlocks so that correct sequences are followed and maximum capacity is achieved by the two mixers.

Under favorable conditions, the mixing plant will actually produce a variety of coated mixtures at a rate of 150 tph.

Batches follow each other through each mixer of the plant, with one in the mixer, one in the heater and one in the check-weigher hopper. A train of seven batches—enough to fill one mixed materials hopper—can be begun entirely automatically by pressing a button, and then the whole cycle can be repeated by pressing it again. All controls are grouped on a control desk and a setting panel, one set of controls serving each mixer unit. However, control may be automatic, semi-automatic, or manual for sectional operation or maintenance.

The two banks of setting controls on the control desk and setting panel govern the proportioning of the various fractions in a batch and, hence, control the graders at the main storage hoppers. In each bank a dial is set to show the percentage of each fraction delivered to the belt. The total must be 100 percent before a batching cycle can be started. The main dials are graduated in 5 percent increments, with an adjustment for super-imposing 2½ percent on any one reading.

The main control desk is similarly divided into two banks and incorporates, in addition to the control switches, dials on which the specified times of the operations in the mixing cycle are set and a batch counter and batch totalizer in each bank. Once a measured batch of materials is placed on the conveyors, from the settings on the panel, the essential measurements and controls as the batch

Please turn to page 119

Ask your Allis-Chalmers dealer to show you "...And a Great Deal More"



SINGLE-LEVER speed and direction control makes it easy for operator to work fast

If a loader operator has to move one lever for forward and reverse, and another lever to get into a higher working gear, chances are he's going to stay in low gear.

Recognizing these limitations on your achieving faster loading, Tractomotive developed Single-Lever speed and direction control to speed up the work cycle. It's on both the big TL-20 TRACTOLOADER*, and the slightly smaller TL-16.

With Single-Lever control, the operator will naturally choose his fast-

est possible working gear every time he shifts. He can go into second gear just as easily as first—and get there on the double. Moreover, when there's loading to be done down the road or across the pit, he power-shifts right into high (road speed), and does the job in a hurry.

Let your Allis-Chalmers dealer show you how this exclusive One-Lever control of speed and direction alone will add many extra yards to your daily production.

Other TL-20 and TL-16 working

advantages include: Longer Reach; Strong, Pin-Connected Planetary Axles; Extra Stability; Safe Dump Cylinder Location; Extra Hydraulic Protection; Hydraulic Torque Converter Drive; Tip-Back Bucket; "Hi-Traction" Differentials; Power Steering; Ignition Key-Type Starting; 4-Wheel Power Brakes; 6-Way Adjustable Seat; Rear-Axle Disconnect; Bucket Position Indicator.

*TRACTOLOADER is a registered Tractomotive trademark.

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ROCK PRODUCTS, March, 1959

NO CONCRETE PIT! *Easiest to MOVE!*



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CAPACITIES: 20 to 52 tons. DECK LENGTHS 18 to 43 ft.

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2213 WEST MISSION ROAD • ALHAMBRA, CALIF.

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Rocky's Notes *continued from page 20*

The much longer time for the pelletized raw materials and fuel to go through the shaft kiln, with the slower but more thorough sintering, may be a distinct advantage in producing a more uniform or homogeneous clinker. If it is true that little or no tricalcium silicate is formed in the rotary kiln until some of the clinker actually slags or melts, it must be that there is not much tricalcium silicate in the shaft kiln clinker, for it would be highly undesirable to let the pellets slag to any appreciable extent. If our assumptions are correct, it seems possible and feasible to make excellent portland cement and even a high early strength cement without a high percentage of tricalcium silicate.

END

Portable plant *continued from page 94*

the partners owns A & E Ready Mix Co. The portable plant also is expected to turn out concrete aggregates between highway and other jobs.

Dividends from use of the new equipment were only partly predicted by Mr. Parnum's initial survey. Private, "on-the-side" work is amounting to a bigger item than was at first indicated. On the first job, driveways, filling-station paving, county road improvement and other private work brought in extra income of 10 percent of the main contract. Moreover, it brought in about 50 percent more revenue per ton than the main bid.

"That seems to be one of the big things portable equipment does," Mr. Parnum said. "It gives us a chance to make our way on a type of work nobody could cover. What's more, it gives people crushed gravel and paving aggregates from a plant in their own neighborhood, which they couldn't get before because of prohibitive hauling costs."

Note: The crushing plant described is a 45 VE Duplex built by Pioneer Engineering, Div. of Poor & Co.

END

Folkestone *continued from page 108*

material, when required, bypasses the impact breaker to be taken by the main conveyor to the screening section of the plant. The $\frac{3}{4}$ x $\frac{3}{16}$ -in. material can follow the same procedure.

The main conveyor has an 18-in. wide belt with about 150-ft. centers. It feeds a 4 x 14-ft. triple-deck vibrating screen with an arrangement of hoppers and split decks designed to separate the gravel into the following sizes: $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$, $1\frac{1}{2}$ in.

and sand. In addition, it has a section of 3/16-in. mesh for the removal of crushed sand which is piped to the sand plant to join natural sand from the boiling box.

The various sizes of gravel are diverted by chutes to their respective concrete ground storage bays. Here again, the chutes are arranged to inter-mix various sizes to provide $\frac{3}{4}$ x 3/16-in., $1\frac{1}{2}$ x 3/16-in. or all-in materials.

END

Slag plant

continued from page 116

passes through the plant are as follows: Check weighing in the weigh hopper; discharge to heater; heating for a given time; discharge to mixer; addition of metered quantity of binder, and flux simultaneously if required, at a given time after the start of discharge into the mixer; weighing filler; addition of filler at a specified interval after the addition of the binder; mixing for a given time; discharge to truck or to hopper positioned by a selector switch.

Opening and closing of all doors is controlled automatically and interlocked to ensure that the preceding batch is clear of the next stage. The binder meter resets automatically after discharging the metered quantity into the mix. The oil consumption of the heater is recorded as a total and as rate of flow; the flame is reduced to a "pilot" flame when the heating period is completed, and restored when a new batch is introduced. It is now normal practice to add a photo-electric device to burners which re-ignites the flame if it should be extinguished.

In semi-automatic operation, the grader-panel push button is depressed to bring a batch to the selected weigh hopper. The weigh-hopper-door button is then depressed to initiate the automatic passage of the batch through the heating and mixing unit for ultimate discharge from the mixer. In hand operation, individual push buttons are depressed to initiate batches from the graders to the weigh hopper, to discharge the weigh hopper to the heater drum, to discharge the heater drum to the mixer, to add binder and flux, to add filler and to discharge the mixer. The measurers and filler hopper automatically recharge while the doors and chutes automatically return to the closed or out positions.

Control and selection of the traveling hoppers and the direct discharge chute in the loading bays is made at the desk, and a warning light indicates to the man at the loading station that the traveling hoppers are about to move. These hoppers are fitted with pneumatically operated doors and electric heaters and are under the push button control of the man at the loading station.

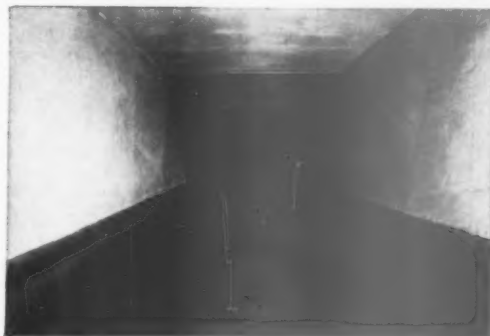
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**Plibrico refractory linings
are built for endurance**



clinker cooler lining when installed



. . . and after almost 2 years service

See for yourself that despite nearly 2 years of service, this Plibrico lining hardly appears to have been in use. That's because it's a "zoned" lining, all one piece, and securely anchored. Plibrico's "zoned" lining efficiently and economically matches various refractory grades to conditions in each furnace zone. One-piece construction overcomes the needless maintenance caused by dust seepage . . . no joints for dust to penetrate. And efficient anchorage beats the vibration problem.

You can enjoy the advantages a Plibrico lining offers. See how by writing today for our #73 catalog covering linings for calcining, drying, and processing furnaces.



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NEW LITERATURE

Welding supplies

AIR REDUCTION SALES CO., a Division of Air Reduction Co., Inc., has released Catalog ADC 848C, a welding supplies and accessories catalog. Illustrated with numerous photos, the booklet covers a complete line of fluxes and ferrous and non-ferrous rods for gas welding, and accessory items including protective clothing, goggles, weld cleaning tools, cylinder trucks and many others.

Enter 600 on Reader Card

Regulating feed rate

HARDINGE CO., INC. has issued Bulletin AH-480 describing its "Electric Ear," an electronic device for regulating the feed rate to grinding mills, based upon the grinding sound from the mill. The unit has been modified to include a sound-level recorder, which makes it possible to keep a 24-hour record of mill operations.

Enter 601 on Reader Card

Truck crane

THE CONSTRUCTION Equipment Division of Baldwin-Lima-Hamilton Corp. is distributing an 8-page catalog illustrating and describing the Lima Type 64-T, 50-ton capacity truck crane with pin-on type front and rear outrigger boxes, hydraulic power steering, independent planetary boom hoist, folding gantry and pin-connected boom.

Enter 602 on Reader Card

Pancake motor

THE LOUIS ALLIS CO. is distributing Bulletin 2150, on its new drip-proof pancake motor which reduces motor length up to 54 percent. Available in 1 to 15-hp. sizes, the motors are designed for space-cramped applications such as in roof ventilating fans.

Enter 603 on Reader Card

Steel castings

FARRELL-CHEEK STEEL CO. has released two folders. One folder, entitled "Farrell-Cheek Electric Furnace Alloy and Carbon Steel Castings," describes the entire line of standard and special steel castings, with provision for obtaining detailed information regarding any of the listed product lines.

The other folder, titled "Farrell-Cheek Specifications," gives detailed chemical analyses, physical properties and discussions of basic steels and products.

Enter 604 on Reader Card

Truck-mounted crane

THE THEW SHOVEL CO. has made available a 12-page catalog describing Lorain 107, a 7 to 8-ton, truck-mounted crane that is convertible to shovel, dragline, clamshell or hoe. The 107 is a superstructure available for mounting on commercial carriers. Hydraulic controls, design, use of anti-friction bearings, precision boom lowering device and the square-tubular-chord crane boom are a few of the features discussed.

Enter 605 on Reader Card

Stationary compressor

ATLAS COPCO has released four-page Leaflet A889-1 describing its line of AR stationary air compressors. Complete operating data on the AR compressor series, which deliver from 330 to 3,220 cfm. at 100 psi., are provided in the leaflet.

Enter 606 on Reader Card

Pumps, conveyors, compressors

THE FULLER CO. has issued Bulletin G-3B discussing applications and performance characteristics of its pumps, pneumatic conveyors, fluidizing conveyors, rotary compressors, vacuum pumps, horizontal-grate coolers and other types of equipment for the process industries.

Enter 607 on Reader Card

Air compressor

LE ROI DIVISION of Westinghouse Air Brake Co. has published Bulletin P-121B describing its new 365 rotary portable air compressor. Photographs are used to illustrate features of the 365RD2 and general specifications are included.

Enter 608 on Reader Card

Belt conveyor

MCNALLY PITTSBURG MFG. CORP. has issued Bulletin 458 providing com-

plete information on the new cradle idler and belt conveyor. Information is given on use of the conveyor for underground material handling. Photographs, dimensional drawings, capacity tables and description of the idler, H-frames and conveyor are included.

Enter 609 on Reader Card

Grouser plates

KENSINGTON STEEL DIVISION OF POOR & Co. is distributing Bulletin 1061, describing the sizes and characteristics of the firm's crawler tractor grouser plates. The plates are made of a manganese steel alloy said to be far harder than regular manganese steel.

Enter 610 on Reader Card

Lubricants

THE ALPHA-MOLYKOTE CORP. has made available its Lubrication Newsletter No. 5, a technical paper covering the effect of lubricants on the "wear in" of new machinery. The results of a continuing series of tests on the lubrication of mating surfaces reveal data heretofore unpublished. Test equipment especially developed for this use is thoroughly described and actual test records are pictured and analyzed.

Enter 611 on Reader Card

Stainless steel thermometers

W. C. DILLON & Co., INC., has issued Bulletin 13 E describing stainless steel thermometers available in five dial sizes from 1 to 5 in. diam., in any stem length from 2½ to 72 in., in twelve Fahrenheit or Centigrade ranges to suit any heat-measuring requirement. Complete specifications on the angle form, straight form and special-purpose thermometers are listed.

Enter 612 on Reader Card

Six-cylinder engine

HERCULES MOTORS CORP. has issued five bulletins (E-116, E-118, E-137, E-139 and E-163) on its 6-cylinder, L-head gasoline engines, ranging in horsepower from 91 to 226. Each bulletin gives specifications and installation diagram.

Enter 613 on Reader Card

(Continued on opposite page)

NEW LITERATURE

(Continued from opposite page)

Packaged grinding plant

ALLIS-CHALMERS MFG. Co. has prepared Bulletin 07B7138 describing a grinding plant featuring a vibrating grinding mill for the processing of a wide variety of materials. Type and size grinding charge, and mill speed and amplitude can be varied. The "packaged" plant requires less than half the space needed by similar capacity equipment.

Enter 614 on Reader Card

Liner plates

SYNTRON Co. has published a data sheet on its electrically heated trough liner plates for its heavy-duty electromagnetic vibrating feeders. The illustrated sheet gives complete data, specifications and descriptions of these plates which can convert conventional feeders to in-transit feeding and drying units.

Enter 615 on Reader Card

Classifying systems

THE BUELL ENGINEERING CO., INC. has released a bulletin describing its new classifying systems. The general operating characteristics of both the centrifugal and gravitational type classifiers are explained and thirteen advantages of the new systems are listed. Two line drawings, graphs and installation photographs along with 16 fields in which the classifiers may be used are given.

Enter 616 on Reader Card

Weather protected motors

THE LOUIS ALLIS CO. is distributing Bulletin 2550 describing its new line of horizontal weather protected motors. Cutaway drawings illustrate a motor construction that is impervious to extremely high winds, driving rain, snow, sleet and sandstorms. Standard and special features are described, and full motor specifications given.

Enter 617 on Reader Card

Pillow blocks

MIETHER MACHINE WORKS has published Catalog 100, which describes its new line of pillow blocks for heavy industry. Said to increase versatility through interchangeable end caps, the line includes 20 basic housings which accommodate 94 sizes of spherical roller bearings.

Enter 618 on Reader Card

(Continued on page 125)



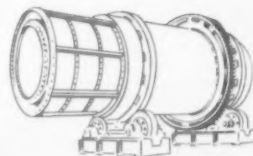
at Becker County Sand & Gravel

**Very Good
Performance**

**IN AN EXTREMELY
DIFFICULT CLAY CONDITION**

This progressive firm reports excellent results in breaking up clay lumps contained in gravel with a McLanahan 8' x 16' Revolving Scrubber. Installed near Lillington, N. C., the unit is effectively cleaning 150 tons per hour of 4½" to 1" feed prior to the screening and crushing operations.

Let us show you how McLanahan Scrubbers deliver high tonnages of exceptionally clean material. Write for details.



McLANAHAN

HEAVY-DUTY

SCRUBBERS

McLANAHAN & STONE CORPORATION

252 WALL STREET, HOLLIDAYSBURG, PA.

Enter 1213 on Reader Card

ROCK PRODUCTS, March, 1959

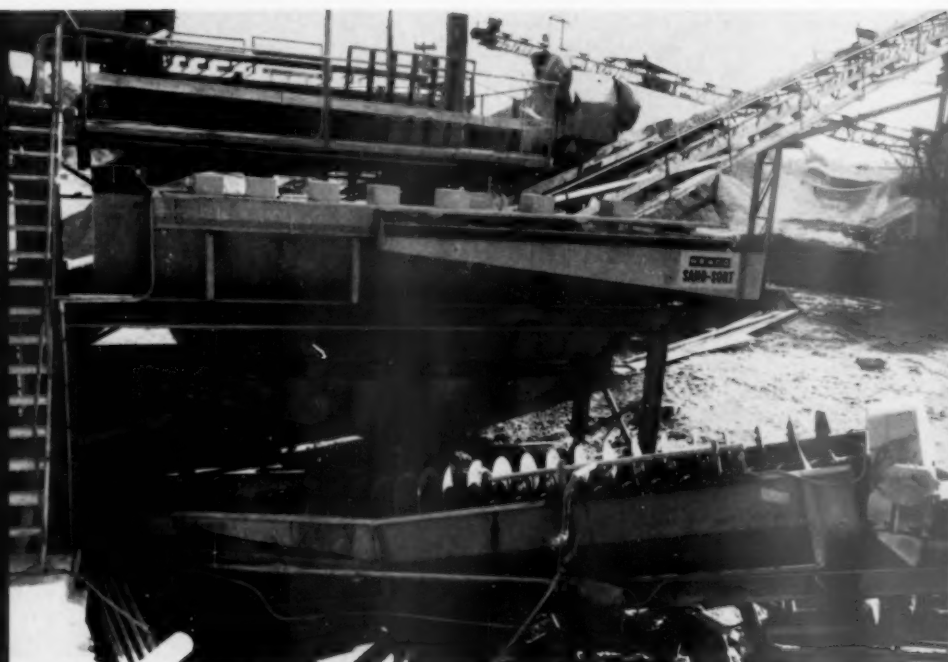
NOW!

THE NEW WEMCO SAND SORT

Free-settling classifying tank

- Separates sands into desired grades and sizes.
- Removes large volumes of excess water.
- Allows sand blending for varied specifications—removal of excess in any size fractions.
- New automatic controls provide maximum flexibility and dependability in operation.

- Controllable valve discharge to meet requirements of sand fraction.
- Spring-loaded valve closure prevents spillage in case of power supply failure and on shut down.
- Individual control of valve mechanisms... adjustable during operation.



Wemco Sand Sort Installed at H. G. Fenton Materials Company... San Diego, California

The Wemco Sand Sort is now ready after long and detailed studies... with thorough analysis of job requirements... careful engineering design... and on-the-job proving.

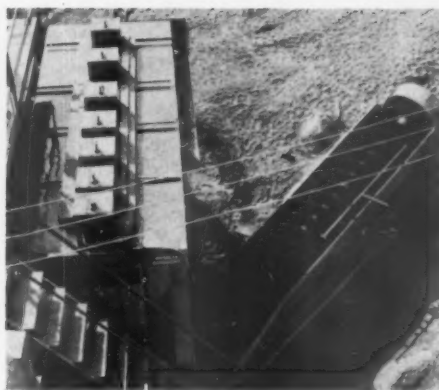
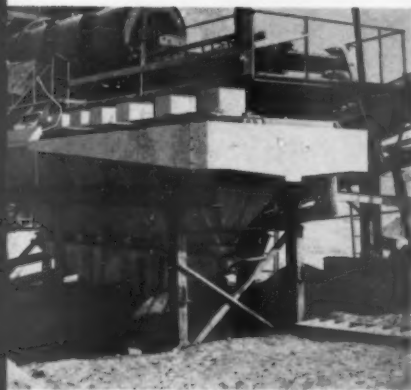
The Wemco Sand Sort design takes into account well-known differences in the characteristics of sand in different size fractions. The action of each sand discharge valve is completely controllable to insure optimum trouble-free operation through *all* size ranges.

And performance is the real pay-off! You'll find in the new Wemco Sand Sort a machine that will do *more* for you, do it *better* and do it for *less*. An operating stand-out in every detail!

W E M C O®

a division of
Western Machinery Company
650 Fifth St., San Francisco, Calif.
and throughout the world

DESIGNED FOR THE JOB! / PROVED ON THE JOB!



The Wemco Sand Sort now joins the Wemco line of quality aggregate treating equipment.

HOW IT WORKS

- Sand-water slurry enters at one end of V-bottom classifying tank. Sand fractions settle out according to their natural settling rate and size. Slimes and water overflow into launder.
- Sands are drawn off through discharge valves along bottom of the tank and can be blended to meet specifications by combining all or part of the discharges from different valves and diverting to one or more flumes—two or three specifications of sand can be produced at one time if desired.
- Discharge valves are automatically controlled in accordance with the depth of accumulated sand. Rate of opening and closing of each valve can be easily adjusted.
- When desired, valves can be individually and manually operated at each control unit box without interference with the operation of other mechanisms.

**GET ALL THE FACTS
NOW!**



WEMCO

650 Fifth Street
San Francisco, California

Please send complete information on the new
Wemco Sand Sort.

NAME _____ TITLE _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____

PREMIUM PRODUCTS

MADE BY RAYMOND

Whizzer AIR SEPARATION



Available in
sizes up to
18' diameter

RAYMOND
Double
Whizzer
Air Separator

The star performance of Raymond Whizzer Separators is due to their advanced design, as described in the new Bulletin #76. Write for your copy today.

Exclusive new features in the latest model Raymond Mechanical Air Separator give the extra efficiency you need for meeting today's stiff specifications at consistent low cost.

It does an excellent job in the non-metallics field for the uniform fine separation of cement, lime, gypsum and similar materials.

When operated in closed circuit with a grinding mill, it greatly increases output of the combined system.

- The Whizzer principle gives sharper separation with higher recovery of fines, and also provides wide range classification to 99.9% minus 400-mesh materials.
- The extra large powerful fan develops maximum capacity rating of the separator.
- Increased size of frame members gives added strength and stability.
- Vertical slide dampers simplify fineness control, and they provide flexibility in changing from standard grades to high early strength cements.
- Improved lubrication system insures new economies in operation and maintenance.

Whatever your plant capacity requirements, there is a suitable size Raymond Separator to meet your needs . . . also Laboratory Separators available for running tests.

COMBUSTION ENGINEERING, INC.

Raymond Division

1108 W. BLACKHAWK ST.
CHICAGO 22, ILLINOIS

Combustion Engineering-Superheater Ltd., Montreal, Canada

SALES OFFICES IN
PRINCIPAL CITIES

Enter 1275 on Reader Card

NEW LITERATURE

(Continued from page 121)

Kiln ring removal

KENNEDY VAN-SAUN MFG. & ENG. CORP. has made available Bulletin No. 58-B describing its boring bar, a new device for removal of rings formed during nodulizing and similar kiln operations. The bar operates without interruption of kiln operation.

Enter 619 on Reader Card

Torque converters

ROCKWELL-STANDARD CORP. has released two bulletins. Bulletin SP-5803 describes the Hydra-Drives torque converters, developed to meet special needs in earth moving, construction and materials handling equipment. Bulletin SP-5804 describes Hydra-Drives power shift transmissions for use on heavy-duty equipment used in off-highway work where multi-speed operation is required.

Enter 620 on Reader Card

Laboratory equipment

ARTHUR S. LAPINE AND Co. has released Volume 10, Number 1, LaPine Apparatus News, introducing many new pieces of laboratory equipment. Some of the new units described are optical goniometers, portable flash evaporators, melting point determination apparatus, a balance with an integral taring device, compression vacuum gauges, freeze-dryers, oxygen inhalators and an oven.

Enter 621 on Reader Card

Rock moving equipment

CATERPILLAR TRACTOR CO. has released a new booklet, "Breaking the Barriers to Profit," which gives short case histories of the firm's crawlers, rippers, front-end loaders, scrapers, dump wagons and graders used in the sand and stone industries. The case histories give the performance of the units in various applications.

Enter 622 on Reader Card

Magnetic equipment

STEARNS MAGNETIC PRODUCTS has released a bulletin describing magnetic equipment for protection against tramp iron such as magnetic pulleys, suspended magnets, drum, plate, grate and spout magnets and many others. Also included is information on heavy-duty equipment for purification and concentration of magnetically responsive materials.

Enter 623 on Reader Card

(Continued on page 127)



always a bigger bite

Weight concentration in the lower center section eliminates top heaviness. Combined with 6 part block and tackle reeving, it gives OWEN Buckets that extra power to dig in at the beginning—and to continue to dig with equal force on both jaws during the entire closing cycle. At the end of the stroke, there is no power loss and lifting tendency is at a minimum.



Other features that make OWEN the leading clam-shell "seller" are:

One-piece Head Construction

Riveted Bowl Construction

Single Main Shaft

Recessed Lip Design

OWEN Engineers are at your service any time at no cost to you. Send us your needs, stating exactly what are your requirements. We should have the answer that will "fit the bill to a T."

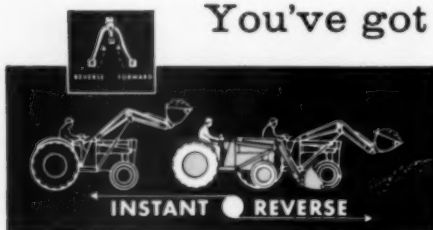
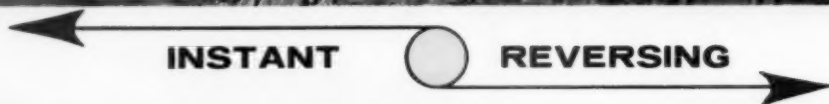
The OWEN BUCKET Co.
BREAKWATER AVENUE, CLEVELAND 2, OHIO

BRANCHES: New York • Philadelphia • Chicago
Berkeley, Calif. • Fort Lauderdale, Fla.



Enter 1239 on Reader Card

M-F... has the only New Approach to Utility Rigs



You've got it **Coming... or Going**
on the **New**

WORK BULL 204

with **Torque Converter**

Massey-Ferguson again shows its leadership in the industrial field with the most important development ever made on industrial utility tractors. This all-new, field-proven Work Bull 204 changes directions instantly, but smoothly, at the touch of your toe — and has a torque converter to maintain correct power-to-load ratio. An efficient 3-point pedal control lets you select forward, reverse, or just engine acceleration. Your hands are free to control the tractor or Davis Loader attachment.

The Work Bull 204 has a high-torque, 40-hp

engine with four equal speeds in either direction to provide a wide work range as well as a favorable road speed. It has full-time power steering, individual left and right brakes, and a hand throttle to pre-set engine rpm for operating attachments. The exclusive Ferguson 3-point hitch provides hydraulic draft control for rear-end attachments. Your choice of new model Davis Loaders, Backhoes, Scarifier-Scrapers, or other power-matched M-F attachments gives you the best all-around rig you could ever own. *Write for the name of nearest dealer and see him soon.*



Work Bull 1001 Work Bull 303 with 500 Loader and Davis Backhoe Work Bull 202 with Davis Loader and Backhoe Work Bull Fork Lift

MASSEY-FERGUSON INDUSTRIAL DIVISION
1009 SOUTH WEST STREET • WICHITA 13N, KANSAS

Enter 1243 on Reader Card

NEW LITERATURE

(Continued from page 125)

Air control valve

JORDAN CORP., Industrial Sales Division of OPW Corp., has prepared Bulletin F-44 describing the No. 234-L two-way air control valve. The bronze valve is used with air-operated hydraulic lifts, hoists, and other industrial air-operated equipment.

Enter 624 on Reader Card

Cyclone apex controls

EQUIPMENT ENGINEERS, INC. has published Bulletin 1400 featuring apex designs and controls for Krebs Cyclones. The bulletin covers proper apex discharges relating to classification efficiency of a cyclone in both open and closed-circuit applications, cut-away drawings and a capacity chart for present cyclone users.

Enter 625 on Reader Card

Duplex hopper scale

RICHARDSON SCALE CO. has issued Product Data Sheet 5809, describing a new duplex hopper scale which weighs, records and prints at production levels up to 200 tons of rock per hour. Rock is delivered alternately to each of two hoppers in the unit.

Enter 626 on Reader Card

Dust control

THE FLEXAUST CO. has released Bulletin 82 to assist engineers concerned with industrial dust control problems of all kinds. Problems and how others solve them are illustrated and selection, pricing and accessory information are included.

Enter 627 on Reader Card

Gas scrubbers

CHEMICAL CONSTRUCTION CORP. has prepared Bulletin M-104 describing its wet gas scrubbers. They have application in several rock industries for cutting air pollution, recovery of valuable material and cleaning of gas for re-use, the firm states.

Enter 628 on Reader Card

Electronic vibrators

SYNTRON CO. is distributing a catalog of its line of electromagnetic vibrators for vibrating bins, hoppers and chutes. The 12-page booklet shows applications and specifications of the firm's 14 standard models capable of vibrating bins with capacities to 150 tons.

Enter 629 on Reader Card

END

ANY WAY YOU
LOOK AT IT...

NEW

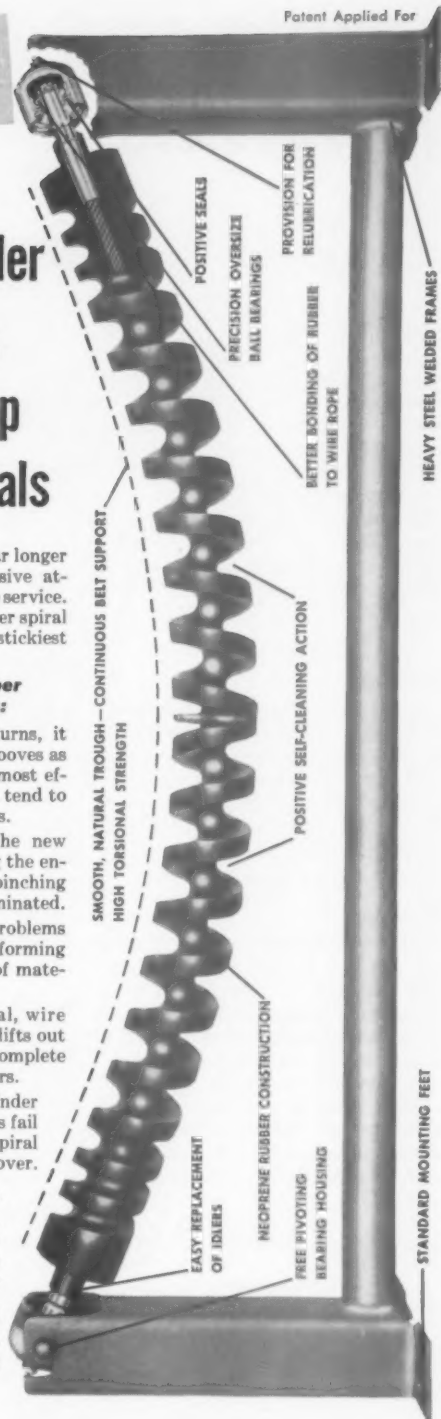
Rubber Spiral Idler lasts far longer, prevents build-up of sticky materials

This new rubber spiral idler lasts far longer than conventional idlers in corrosive atmospheres or exceptionally abrasive service. And its exclusive self-cleaning rubber spiral prevents build-up of even the stickiest materials.

Here are some of the rubber spiral idler's advantages:

- **SELF CLEANING.** As the spiral turns, it "works" any material out of the grooves as they change shape. This action is most effective with sticky materials which tend to build up on common types of idlers.
- **CONTINUOUS BELT SUPPORT.** The new rubber spiral design "moves" along the entire width of the belt; therefore, pinching and sharp bending of the belt are eliminated.
- **SELF TRAINING.** Belt training problems are greatly reduced by readily conforming rubber spiral, and by elimination of material build-up.
- **EASY REPLACEMENT.** The spiral, wire rope, and bearing assembly simply lifts out of its brackets—no tools needed. Complete idler fits standard conveyor stringers.
- **TRUE OPERATING ECONOMY.** Under conditions where conventional idlers fail prematurely, the Hewitt-Robins spiral idler will pay for itself many times over.

Deliveries of this revolutionary new idler are now being made in 18, 24, 30, and 36 inch belt sizes. In addition to the type shown, it is also furnished with a spreader frame for use in wire rope conveyor systems. For further information check your H-R distributor, or write Hewitt-Robins, Stamford, Connecticut. Ask for Bulletin 3-19.



HEWITT-ROBINS

CONVEYOR BELTING AND IDLERS... POWER TRANSMISSION DRIVES
INDUSTRIAL HOSE... VIBRATING CONVEYORS, SCREENS & SHAKEOUTS

H-R Product Manufacturing Plants in Buffalo, N. Y. • Chicago, Ill. • King of Prussia, Pa. • Passaic, N. J.
Amsterdam, Holland • Johannesburg, South Africa • London, England • Montreal, Canada • Paris, France

Enter 1238 on Reader Card

ROCK PRODUCTS, March, 1959

127

NEW U.S. PATENTS

OLIVER S. NORTH

Recently issued patents on nonmetallic minerals*

Aggregates

2,858,227—In the making of strong, lightweight building block, sheets, etc., from portland cement and expanded **perlite**, a small amount of a mixture of aluminum sulfate, copper sulfate, calcium chloride, and hydrated **lime** is added to the raw concrete slurry. The slurry then is extruded or pressed into shapes, and the shapes cured in the open or by heat or steam (to B. Rodsky; 37½ percent each assigned to J. C. Boyd and W. E. Boyd).

Asbestos

2,861,967—Use of **talc**, **bentonite**, and Canadian 7R or 5R **asbestos** fiber in mastic compositions for spraying or troweling onto block and slabs used for insulation. (to W. P. Ellis, L. I. Smith and I. J. Steltz. Assigned to Benjamin Foster Co.)

Borax

2,858,895—A composition for spraying onto vegetation or other combustible materials in the path of a fire to retard the progress of the fire consists of an aqueous suspension of finely-divided calcium-containing borate, such as **colemanite** or **ulexite** or mixtures thereof. A small amount of Wyoming **bentonite** may be added to stabilize the suspension (to G. A. Connell; assigned to United States Borax & Chemical Co.).

2,859,123—**Borax** is used in a shellac composition, in sufficient quantity to solubilize the shellac in water (to T. B. Smith; assigned to Simoniz Co.).

2,857,148—Improved method and apparatus for firing rotary kilns, such as are used for producing **portland cement**, **lime**, etc., with natural gas (to G. Niemitz; assigned to Kennedy-Van Saun Mfg. & Eng. Corp.).

2,859,124—In the production of elemental phosphorous and a light-

colored **alumina cement**, a mixture of Demerara bauxite and fluorine-containing and siliceous **phosphate rock** is thermally reduced. The resulting slag is cooled slowly and ground to produce alumina cement (to G. King; assigned to Albright & Wilson (Mfg.) Ltd., Oldbury, England).

2,859,484—Improved method for manufacturing sheet materials from **asbestos** fiber and **portland cement** (to C. V. French and E. R. Ihne; assigned to Johns-Manville Corp.).

2,859,955—Apparatus and method for effectively cooling **portland cement** clinker, **lime**, or the like. The material is first partly cooled on a grate through which air is passed, and then it is separated into fine and coarse fractions. The coarse fraction is crushed and recombined with the fines, and the material subjected to additional air cooling (to L. Petersen; assigned to F. L. Smidth & Co.).

2,860,060—A dry, powdery additive for modifying the strength, cohesiveness, workability, and setting properties of **portland cement** comprises dry waste sulfite liquor solids, a water-soluble aromatic carboxylic acid, a chloride accelerator, and a non-carboxylic amine. Several examples of the use of cements containing this additive, compared with ordinary cement, are given (to S. W. Benedict, T. M. Kelly and P. B. Jacox; assigned to American-Marietta Co.).

2,860,061—As a means of obtaining strong, nondusting nodules of clinker when the raw materials are burned in a rotary **portland cement** kiln, ½ to 4 percent of **bentonite** or **fuller's earth** is added to the raw mix. This mix is nodulized before it is calcined in dry process kilns (to T. Heilmann; assigned to F. L. Smidth & Company).

Cement

2,861,353 and 2,861,356—Rotatably-mounted vertical column apparatus for the efficient cooling of products from a rotary kiln such as **portland cement**, **lime**, **dolomite**, **magnesite**,

etc. (to O. G. Lellep. Assigned to Allis-Chalmers Mfg. Co.)

2,861,788—Shaft kiln for producing **portland cement**, **lime**, or burned **dolomite**. The outer walls of the kiln are cooled at least along certain zones, so as to influence the burning process. (to H. R. Suter. Assigned to L. von Roll, A. G.)

2,863,654—Design for a vertical rotary heat exchange unit for utilization of rotary kiln gases to preheat **lime** of **portland cement** raw mixes, either dry or dewatered slurry. Good heat efficiency and maximum recovery of fine particles are claimed. (to R. V. Beal and L. H. Bishop. Assigned to The Associated Portland Cement Manufacturers Ltd.)

2,863,726—Method of producing **portland cement** and **sulfur** simultaneously, by either a wet or a dry process. A raw mix high in **anhydrite** or **gypsum** is burned in a reducing atmosphere, and the resultant gases recovered and treated for the sulfur content. Calcine from the first kiln is recalcined in a second rotary kiln to produce satisfactory cement clinker. (to J. Kamlet.)

2,868,753—A low water-loss oil well cement is made by adding, either to the dry **portland cement** or to the cementitious slurry, an acid copolymer of acrylamide-acrylic acid. (to R. L. Morgan and E. L. Kolodny. Assigned to American Cyanamid Co.).

Clays

2,863,758—**Kaolin** or **ball clay** is specified as preferable to the more frequently used **bentonite** as binder material in these zinc oxide ore briquettes which are to be smelted in a vertical retort. (to R. G. Crane and O. J. Cerna. Assigned to American Smelting & Refining Co.)

Diatomite

2,860,997—Use of prepared **diatomite** as a high-specific-surface-area carbon carrier in a process for making bubble glass. (to D. D'Eustachio.)

(Continued on page 134)

*Copies of United States patents are available at a cost of 25 cents each from The Commissioner of Patents, Washington 25, D.C. For convenience, coupons, each good for one copy of any patent, may be purchased from that office at the rate of \$5.00 per 20-coupon pad or \$25.00 per 100-coupon pad.



Rear-Dump "Eucs" have payload capacities of 10 to 50 tons—are powered by engines of 128 to 670 total h.p. . . . have loaded speeds up to 41 mph.

For Lower Hauling Costs in Mines and Quarries Check Euclid Performance

Open pit mine and quarries the world over have standardized on Euclid equipment for moving earth, rock, coal and ore on tough off-the-highway hauls. They know from years of experience on their own operations that "Eucs" get more work done every shift—that production cost is lower than with other types and makes of equipment.

Euclid has a complete range of sizes and models to fit every job requirement—rear dump and bottom dump haulers, self-powered scrapers and the world's most powerful crawler tractor. Your Euclid dealer will be glad to provide a production-cost estimate on your present or planned operations—be sure to see him before you replace or add to your equipment fleet—and have him show you why Euclids are your best investment.

EUCLID Division of General Motors Corporation
Cleveland 17, Ohio



Bottom-Dumps carry 13, 17 and 25 cu. yds. struck . . . special coal hauler trailers have capacities of 25, 40 and 51 tons. Full length, unobstructed door opening make these "Eucs" ideal for dumping free-flowing material into drive-over hoppers.



The TC-12 Crawler has 2 engines and independent track drive . . . 402 net h.p. . . . full power shift . . . top speed of 7.8 mph. This "Euc" tractor has unequalled work-ability for heavy dozing, ripping and similar work in mines and quarries.



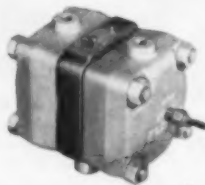
This "Twin" Scraper has 2 engines with Torqmatic Drive . . . all wheel drive permits self-loading . . . struck capacity is 24 cu. yds. There are six other Euclid Scrapers, overhung engine and six wheel types, with struck capacities ranging from 7 to 24 yds.—9 to 32 yds. heaped.



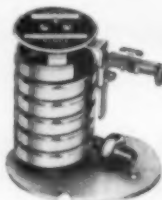
EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

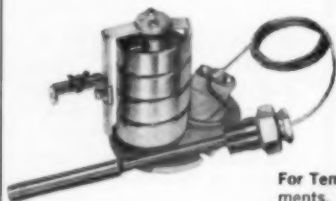
TYPICAL MOTION-TYPE TRANSMITTER MEASURING ELEMENTS



For Flow and Liquid Level — Type 37 Mercuryless Diaphragm Element. Ranges from 20 to 200 inches water.



For Pressure — Helical Elements, with ranges from 0-200 to 0-6000 psi. Ranges from 10 inches water to 80,000 psi available with other Foxboro pressure elements.



For Temperature — Helical Elements, for liquid filled, vapor pressure, and gas filled thermal systems.

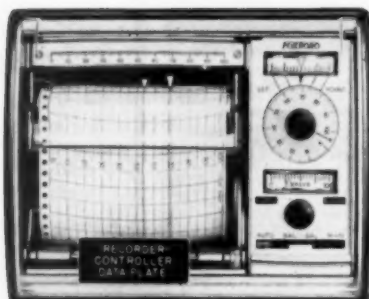


INDICATING TRANSMITTER—MOTION-TYPE

Electronic Transmitter measures flow, pressure, temperature, level, and other variables. Provides local measurement indication *directly* from the primary element — completely independent of electrical components and power supply. Transmitter uses any standard Foxboro measuring element. No tubes — solid-state components used throughout.

FOXBORO Electronic

REG. U.S. PAT. OFF.



COMBINED RECORDER-CONTROLLER

COMPLETE LINE OF RECEIVING INSTRUMENTS

Electronic Consotrol housing design permits unequalled flexibility in panel arrangement. Recorders and controllers can be enclosed in a 6" x 9" compound unit, as shown at left, or can be mounted separately — recorder in compact 6" x 6" case; controller in one slim 3" x 6" case. Regardless of mounting, controller operation is entirely independent of recorder, and both units pull out separately.

Electronic Consotrol Instrumentation also includes a full line of computing stations, valve actuators, ratio and cascade control systems, and alarms.

for the first time... the 100% solid state electronic system!

- thermocouple and resistance bulb converters—using magnetic amplifiers
- choice of force-balance and motion-type transmitters
- long time-constant tubeless controllers

Consotrol Instrumentation

Electronic Consotrol® Instrumentation — the most complete and advanced family of electronic-operated measurement and control instruments available today! That just begins to describe Foxboro's dramatic new advance in instrumentation. ✓ ✓ ✓ Foxboro electronic transmitters, indicators, recorders, control stations, computing stations, valve actuators and other final operators cover every function in the control loop. All are linked by a d.c. current signal. All are completely tubeless. Even thermocouple and resistance-type systems no longer require vacuum tubes. ✓ ✓ ✓ Electronic Consotrol systems convert temperature, pressure, flow, level measurement, etc., to a proportional signal at the transmitter. Transmission to a remote control station is instantaneous — using an electronic motion-type or force-balance transmitter. Designs are available for both hazardous and non-hazardous areas. ✓ ✓ ✓ Electronic Consotrol Instrumentation heralds a whole new era in process control engineering. Write Foxboro today for the new 32-page Catalog 21-10 which gives full details. **The Foxboro Company, 833 Neponset Ave., Foxboro, Mass., U.S.A.**

® Reg. U.S. Pat. Off.

Enter 1244 on Reader Card

HARD-HITTING DRILLS

THE SIZE, THE POWER AND



5 1/4" hammer diameter—Here's deep hole drilling power that packs plenty of punch. Gardner-Denver DH143 fills the rock drill gap between wagon drill and rotary rig.



Tough and long-lasting—Gardner-Denver drill steel. Emergence from heat-treat furnace shows carburizing process that results in abrasive-resistant exterior and tough inner core.



First choice in crawler drills—The versatile swing-boom "Air Trac"®. Now available in a variety of models including stiff- and swing-boom units with complete hydraulic components.

FOR ANY ROCK CUT...

THE SPEED YOU NEED

**Select your rock drills
from the most complete line
of drifters in the field
... GARDNER-DENVER**

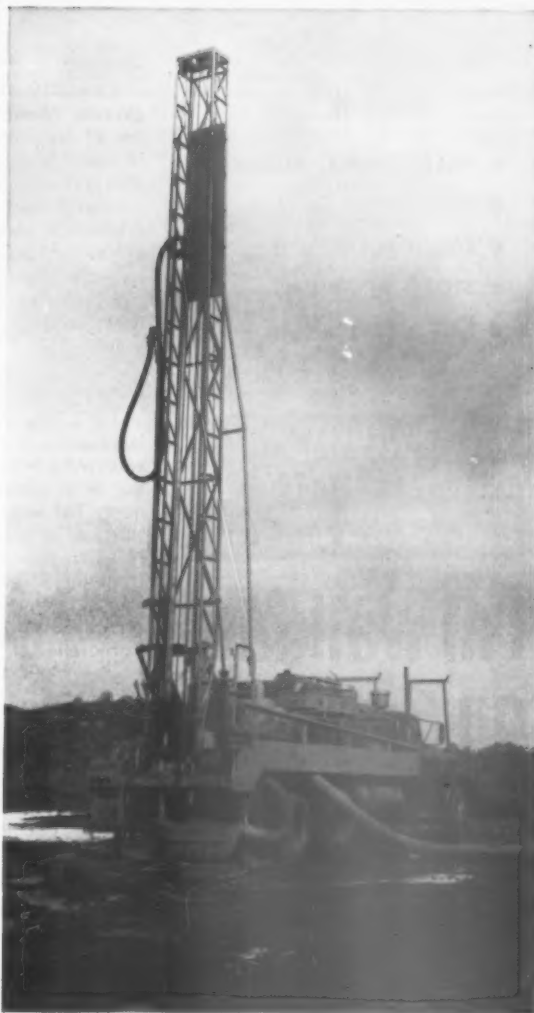
Gardner-Denver offers the most complete range of drifter drills known, thus assuring the right drill for your application, regardless of what it may be.

Talk to a Gardner-Denver blast hole specialist before you figure your next bid. His experience can help you select the best blast hole plan and the right equipment for the job from Gardner-Denver's complete line of drills, rigs, steel and accessories.

MIDNIGHT MISSION



When unexpected developments demand immediate attention (additional equipment, essential parts, special service), a Gardner-Denver man is ready to go—any time, anywhere. And at Gardner-Denver, there's no substitute for men—our 100-year philosophy of growth.



In-the-hole power for rotary rigs—New Gardner-Denver "Mole-Dril"* rides with the bit through rock . . . delivers more striking power than any other drill of its size.



EQUIPMENT TODAY FOR THE CHALLENGE OF TOMORROW

GARDNER - DENVER

Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curly Avenue, Toronto 16, Ontario

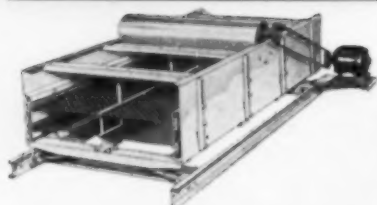
*Trade-Mark

ROCK PRODUCTS, March, 1959

Enter 1283 on Reader Card

133

FOR PROFITABLE
SCREENING USE
UNIVERSALS



- FAST, SIMPLE, RUGGED
- DEPENDABLE
- ECONOMICAL
- STOCK DELIVERIES
- FAST SERVICE

Write today for free catalog No. 150
on screens and screening

**UNIVERSAL
VIBRATING SCREEN CO.**
Racine, Wisconsin
Quality Screens Since 1919

Enter 1270 on Reader Card

**I'm walking
on air...**



Just had my annual medical check-up. (Smart move.) I'm making out a check to the American Cancer Society, right now—that's a smart move, too.

**Guard your family!
Fight cancer with
a checkup and a check!**

AMERICAN CANCER SOCIETY

NEW U. S. PATENTS

(Continued from page 128)

Gilsonite

2,861,892—Use of **gilsonite** in a petroleum-base composition for preventing rust and corrosion of metal surfaces. (to F. J. Radd, D'A. A. Schock and J. D. Sudbury. Assigned to Continental Oil Co.)

Gypsum

2,862,829—Method for aerating a **gypsum** plaster or stucco slurry by use of pre-formed protein foam, and of controlling the setting time of the slurry. Potassium sulfate or sodium sulfate is used as a set retarder. The product is used to form lightweight block, slabs and other molded articles. (to J. S. Dixon, Jr., and E. J. Kolosius. Assigned to National Foam Systems, Inc.)

Langbeinite

2,862,788—In the processing of **langbeinite**, a method is provided for recovering potash and magnesium values from potassium sulfate reject liquor. The solid phase kainite-NaCl is slurried in water, and the dissolved NaCl fraction mechanically separated from the kainite. (to W. N. Stanley, Jr., and W. B. Dancy. Assigned to International Minerals & Chemical Corporation.)

Lime

2,858,123—Improved apparatus for calcining and cooling **lime** particles. Material leaving the rotary kiln drops directly into a soaking zone, where any incompletely burned particles remain until they are completely calcined by heat transfer from other particles (to L. H. Niems; assigned to Marblehead Lime Co.).

Mica

2,857,051—Method for recovering muscovite **mica** from ores containing it, such as, for example, **nepheline syenite**. The ore is ground to pass 20-mesh and conditioned with quebracho extract to depress the gangue minerals. The pulp is then treated with an amine and a frother, and subjected to froth flotation at a pH of 7.5 to 9.5. Muscovite is concentrated in the froth (to H. L. Noblitt).

2,859,794—Method of making a hot pressed synthetic **mica** sheet, which has sharply increased dielectric strength. Surface pores are filled with ground glass or similar inert filler (to

F. A. Barr; assigned to Sylvania Electric Products, Inc.).

2,860,058—Method for manufacturing moldable, heat-resistant materials, such as textiles or millboard, from a reaction mixture of **mica** and/or **asbestos** with polyphosphonitrile chlorides (C. A. Redfarn; assigned to Walker Extract & Chemical Co. Ltd.).

2,863,721—Improved method of treating phlogopite **mica** to form a dielectric material which exhibits a resistivity of over 0.01 megohm microfarad at high temperatures, e.g., up to 600 deg. C. The splittings are heated to 850-1,050 deg. C. for a period of one to seven hours. (to H. S. Endicott and G. E. Ledges. Assigned to General Electric Co.)

2,865,426—Manufacture of an integrated sheet of **mica** flakes having a skeletal silica shell in the mica pores and cured orthophosphoric acid impregnating the silica shell. This sheet is strong, nonhygroscopic, nongrained, resistant to higher temperatures than natural mica sheet, and has good dielectric properties. (to M. D. Heyman. Assigned to Integrated Mica Corp.).

Phosphate rock

2,857,245—Improved acid digestion process for producing dicalcium phosphate from **phosphate rock** (to E. A. Fallin; assigned to Consumers Products Co.).

2,857,262—Method for evaporating water from slurries produced in the manufacture of fertilizers from **phosphate rock**, nitric acid, and ammonia (to J. L. Graham; assigned to TVA).

2,858,203—In the continuous production of storage-stable, pulverulent superphosphate, **phosphate rock** is treated with H₂SO₄ and the resulting reaction mixture processed through a partly enclosed system in relatively thin layers (to G. Bellinzoni; assigned to Montecatini, Societa General per l'Industria Mineraria e Chimica).

2,859,105—In the manufacture of fertilizers from Moroccan or Florida **phosphate rock**, ammonia and recycled oversize granules are mixed with the acid sludge (to J. Moyrand and B. Bigot; assigned to Societe Anonyme des Manufactures des Glaces et Produits Chimiques de Saint-Gobain).

2,860,037—Method for processing **phosphate rock** to produce calcium carbide which is low in calcium phosphide, and suitable for generation of ethylene or to form calcium cyanamide (to J. Kamlet).

END



PRIMARY PLANTS: Use with Intermediate and Secondary Plants or alone for producing ballast. Jaw crushers 1524 in size. Choice of portable apron or built-in feeder. Some have scalping screen ahead of crusher.



INTERMEDIATE PLANTS: Used with Primary and Secondary Plants to increase flexibility of operation and boost output. Meets highway height, width, and weight limits. Models offer choice of either jaw or roll crusher.



IN-LINE GRAVEL PLANT: Extra large capacity with low weight. Meets most highway load limits. Has 1036 jaw crusher, 30" x 24" rolls, 4' x 12' — 2½ deck vibrating screen... yet weighs only 55,900 lbs. on the road!



SECONDARY PLANTS: 4 models of Secondary Plants offer choice of 3018, 4022, and 5424 twin roll crushers or 4022 triple roll crusher with 3' x 10', 4' x 10', or 4' x 12' — 3½ deck vibrating screens.

For men who like to underbid their competitors... (and make a nice profit, too)

Pioneer Portable Crushing Plants



BOTTOM DECK FEED PLANTS: Exclusive method of routing material through plant gives twice the effective screening area of conventional plants, also lets operator equalize load between jaw and roll crusher while plant is operating. These and other features, give extra capacity and unusual control of gradation. Four models.



44 AND 45 SERIES: Full deck sand screen rejects fines and small rock bypasses jaw crusher. These and regular Bottom Deck Feed features give extra big capacity. 4 full screen decks and spouting arrangement can produce 4 sizes of material at same time. Electric or mechanical drives.

PIONEER Distributors and PIONEER's own field engineers are experienced in all phases of aggregates production. They will be glad to study your project, analyze your needs, then help you design an efficient installation that will fit your need.

Pioneer® EQUIPMENT

Pioneer Engineering, 3200 Como Avenue S.E., Minneapolis 14, Minnesota
Division of Poor & Company, Inc. • Chicago

Please send information on equipment checked below.

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|---|--|---|
| <input type="checkbox"/> GRAVEL & ROCK PLANTS | <input type="checkbox"/> JAW CRUSHERS | <input type="checkbox"/> ORG FEEDERS |
| <input type="checkbox"/> WASHING PLANTS | <input type="checkbox"/> ROLL CRUSHERS | <input type="checkbox"/> MECHANICAL FEEDERS |
| <input type="checkbox"/> BITUMINOUS PLANTS | <input type="checkbox"/> IMPACT BREAKERS | <input type="checkbox"/> VIBRATING SCREENS |
| <input type="checkbox"/> BITUMINOUS PAVERS | <input type="checkbox"/> APRON FEEDERS | <input type="checkbox"/> CONVEYORS |

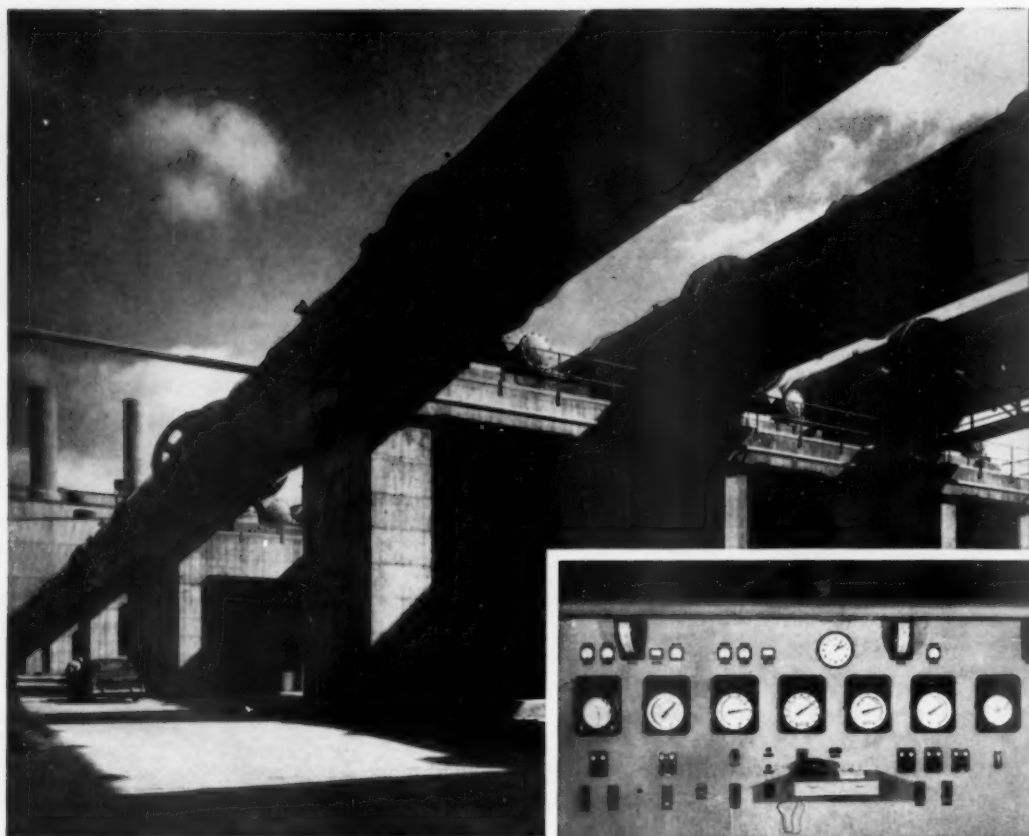
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Company _____

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All kilns operated by Missouri Portland Cement Company are equipped with modern Bailey Instrumentation and Control Systems.

How to control the digestion of giant kilns

These giant kilns have delicate stomachs. But the Missouri Portland Cement Company knows how to coddle them to get maximum capacity, uniform product and low fuel rate.

They do it with a Bailey Control System with a central Control Panel where a single attendant has complete control of the variables of combustion and heating.

Because the system keeps continuous chart records, the Burner can check the reading and trend of Kiln Speed, Exit Gas Temperature, % Oxygen in Exit Gas, % Combustibles in Exit Gas, Kiln Shell Temperature, Hood Draft, Temperature of Secondary Air Leaving Cooler,

Temperature of Coal-Air Mixture from Coal Mill, Fuel Gas Flow, Feed End Draft, Kiln Speed, Cooler Speed, Cooler Fan Discharge Pressure, Cooler Undergrate Pressure, Cooler Air Flow, Coal Mill Primary Air Pressure, Coal Mill Exhauster Fan Suction, and Fuel Gas Flow.

The system works so dependably that week-long kiln runs have been made without the operator touching anything.

Let a Bailey Engineer help you plan for peak performance! For additional information write for a Bailey Kiln Control Folder.

C-14



BAILEY METER COMPANY

1039 IVANHOE ROAD • CLEVELAND 10, OHIO

In Canada—Bailey Meter Company Limited, Montreal

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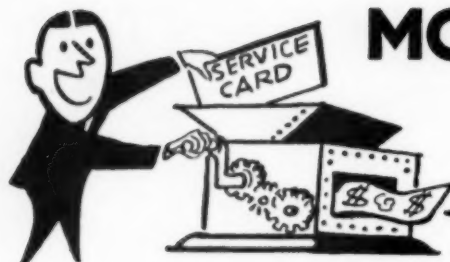
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MAIN PRODUCT OF PLANT _____ CAPACITY _____

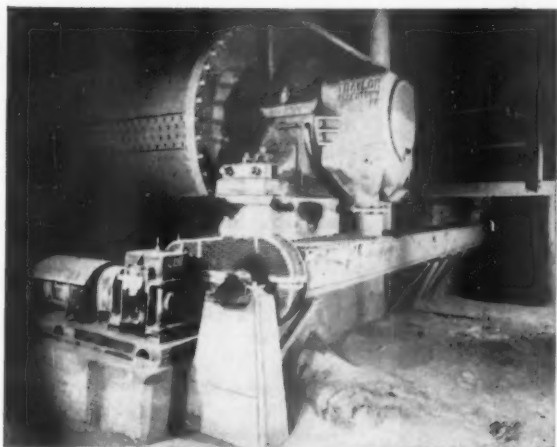
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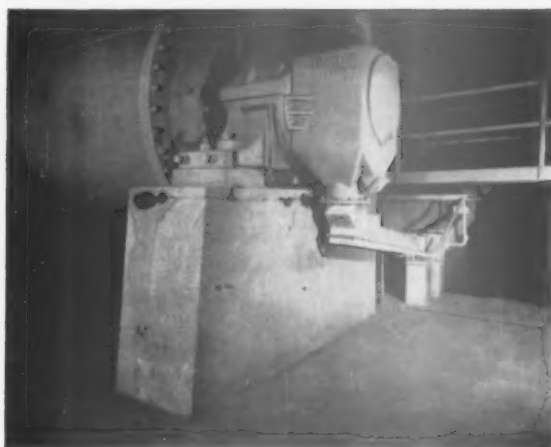
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The Arithmetic of Materials Handling



BEFORE: Dirt, noise and mechanical breakdown were constant problems in this cement plant, where two mechanical conveyors were used to collect raw materials. A 5 h.p. motor driving auxiliary equipment wasted valuable space and power, required frequent maintenance. Spillage clean-up wasted costly man-hours.



AFTER: Clean, simple, quiet. Notice the difference two 8" F-H Airslide® fluidizing conveyors have made. No dangerous moving parts. Nothing to lubricate. Auxiliary equipment and foundations are gone. Power needs are now only 1/3 of previous needs. Fluidizing saves wear and maintenance.

AIRSLIDE® Fluidizing Conveyor minimizes material loss . . . maintenance . . . moving parts

If you are now handling dry, pulverized materials, the F-H Airslide Fluidizing Conveyor can help you stop noise, and air-pollution, as well as speed flow and reduce maintenance cost.

Simplicity Itself

F-H Airslide conveyors fluidize dry, pulverized materials with low pressure air.

These materials literally flow at high speed, down the inclined conveyor. Power requirements are small.

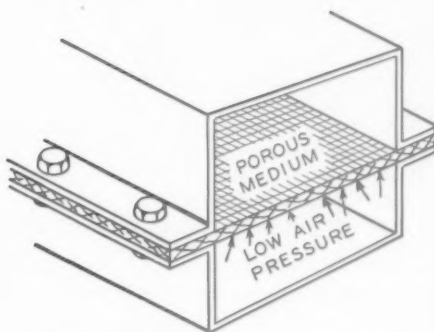
Flexibility, Low Cost

For unlimited applications, Airslide conveyors take up little space, and can be used singly and in combination with other Fuller pneumatic conveying systems. The movement of fluidized material can be around corners, between floors, through walls—nearly any conveying distance.

Better Housekeeping

Can Fuller conveying systems help eliminate your housekeeping problems—cut your maintenance and handling costs? Write today, outlining your problem in handling dry, finely-divided materials. Fuller will gladly make appropriate recommendations.

"Pulverized Materials Flow Like Water!"



FLUIDIZING PRINCIPLE: Porous supporting medium divides conveyor section into two "compartments". Dry material flows down inclined conveyor, fluidized by low-pressure air entering beneath porous medium.



4483
FH 59

"See Chemical Engineering Catalog for details and specifications".

ROCK PRODUCTS, March, 1959

FULLER COMPANY
102 Bridge St., Catasauqua, Pa.
SUBSIDIARY OF GENERAL AMERICAN TRANSPORTATION CORPORATION
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139

NEW MACHINERY



New concept in rotary kiln design

ROTARY KILN USERS will be glad to know that a new design has been developed to combat the plague of high operating and maintenance costs. Called "a new concept in rotary kiln design," the new product is expected to cost little or no more than present kilns. In addition to reduced maintenance, the kiln is said to offer reduced capital investment cost through simplicity of installation.

The "new concept" came out of a prolonged study of mechanical forces involved in rotary kiln operation. The forces were evaluated, and design was developed to react to them in a predictable manner.

Features of the new design include (1) new self-aligning trunnion rollers with anti-friction bearings, (2) thrust load control, (3) pressure lubrication system and (4) use of modern materials and methods in machining and fabrication.

The roller assembly includes a swiveled trunnion roller, which automatically aligns itself with the axis of the kiln to take only radial loading. The trunnion roller assembly is equipped with spherical roller bearings, and is swiveled over a lubricated brass plate. A separate assembly is designed to absorb all the thrust load incident to the slope of the kiln. The latter is arranged to carry the thrust

load by a bearing both above and below the thrust line of action.

Concentricity between riding ring and girth gear is said to be assured by mounting each on an integrally machined sub-assembly of the shell. This feature allows the economical use of alloy steel forgings for riding ring and to provide proper Brinell relationship between them, to give long life. Since the gear train is mounted on the same pier that carries the associated trunnion rollers and thrust roller, field installation is simplified and certain.

Spherical roller bearings are used throughout. They are lubricated constantly by a centralized pressure-lubrication system, in which oil is filtered and cooled before being recirculated. The system is equipped with a howler, which lets the operator know when it needs attention.

Mechanical refinements in the new kiln design are said to simplify foundation plans, avoid frictional wear (frictional horsepower has been reduced nine-tenths), reduce starting torque and power load, and decrease maintenance and downtime costs. The new kiln design included no attempt to improve the chemistry of the calcining process. *Vulcan Iron Works, Wilkes-Barre, Pa.*

Enter 200 on Reader Card

Adjustable speed drive

THE AJUSTO-SPEDE DRIVE is available in ratings from $\frac{3}{4}$ to $7\frac{1}{2}$ hp. with a stationary field construction. All brushes, commutators and slip-rings have been eliminated. The redesigned construction in these ratings reduces the length of the drive up to 22 percent. Both the ac. motor and eddy current clutch are built into a common housing. The drive shaft, height and diameter dimensions are the same as a standard motor of comparable rating. Motor end brackets are now interchangeable with standard flanges and units can be flange-mounted to the driven machine for further space saving.

In this drive, an ac. motor drives a clutch drum at constant speed while speed on the clutch spider (output member) is adjusted by varying dc. excitation to the clutch coil. Direct current is supplied by a small controller. Command of drive operations is concentrated in a separate operator's station. *The Louis Allis Co., 427 E. Stewart St., Milwaukee 1, Wis.*

Enter 201 on Reader Card

Power units

A LINE OF ac. to dc. rectifier power units, regularly available with selenium rectifiers only, now includes the choice of silicon rectifiers as well. This change affects the company's complete line of three-phase and single-phase, high and low voltage power units.

This line of power units offers the same features as previous units—92 to 97.5 percent power factor, 10 percent voltage regulation from no load to full load, 4 percent ripple in direct current, low no-load losses, high overload capacity, simple installation, low maintenance requirements and long, continuous operation.

Standard three-phase power units are available in kilowatt capacities ranging from $\frac{3}{4}$ to 500 for single units. Larger capacities are possible with combinations of units. Single-phase unit watt outputs range from 250 to 3,000. Special low-voltage power units offer capacities of from 1,000 to 10,000 amp. in standard 6, 9, 12, 18, 24 and 48 volts dc. *Syntro Co., 450 Lexington Ave., Homer City, Pa.*

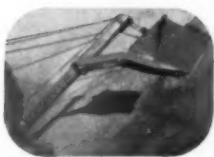
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(Continued on page 142)

new McCaffrey all cable shovel loader



**loads, swings, and dumps
without travel... requires no
special hydraulic equipment**



McCaffrey's versatile new loader can be adapted to fit any $\frac{3}{4}$ yard or similar crawler or pneumatic tire machine. It is designed and engineered for fast cycle time, maximum economy of motion and unusually low maintenance. Also available in comparably larger sizes for larger machines.



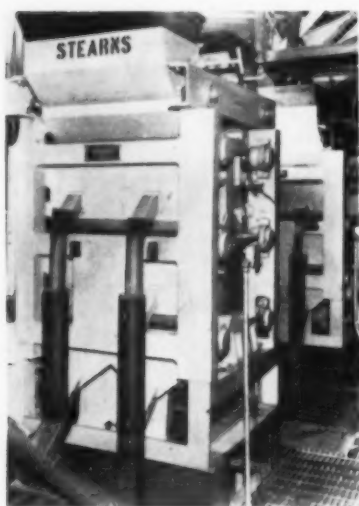
Write for complete details.

M. P. McCaffrey, Inc.

2121 E. 25th St., Los Angeles 58, Calif. • LUdlow 8-7181

NEW MACHINERY

(Continued from page 140)



Magnetic separator

A HIGH-INTENSITY magnetic separator of the induced roll type is reported to be operating successfully in several mineral processing plants. The unit is able to separate materials formerly considered unresponsive to magnetic treatment.

The basic design of the magnetic separator provides a number of inductively magnetized rolls arranged vertically. Each roll revolves in a controlled magnetic circuit. Material to be processed is fed to each roll successively by gravity. Magnetically responsive particles are deflected from the normal trajectory as the feed passes over the magnetized roll. Final separation of the least responsive material takes place at the last roll, where magnetic intensity is strongest.

The unit is extremely flexible in application and lends itself to practically any separation problem that can be reduced to the relative magnetic responsiveness of the material being treated, the manufacturer states. *Stearns Magnetic Products, 635 S. 28th St., Milwaukee 46, Wis.*

Enter 203 on Reader Card

Heavy duty air motors

A NEW LINE of Pistonair five-cylinder, radial air motors for heavy-duty service is said to combine extremely high starting torque and sustained load-lugging ability. They feature simple throttle valve control that allows instant starts and stops, unlimited reversibility and infinitely variable speeds. Repeated overloads or stalls cannot harm these motors. They operate safely and dependably in ex-

plosive, damp, hot or corrosive atmospheres. Pistonair motor horsepower ratings range from 11½ to 20 at 90 psi. *Joy Manufacturing Co., Oliver Bldg., Pittsburgh 22, Pa.*

Enter 204 on Reader Card

Dozer edges

INTRODUCTION of multi-section bulldozer edges for D8 and D9 angling and straight dozers is announced. The edges, formerly available in one-piece units, are now available as one or two-piece units.

Easier to handle than the one-piece edges, the new multi-section edges speed replacement or reversing time. Weighing less than 200 lb., they can be transported in a light truck and installed by a two-man team without the use of special hoist equipment. Worn sections can be reversed left to right or replaced individually. The blades are Hi-Electro hardened for resistance to wear, bending and breaking. *Caterpillar Tractor Co., Peoria, Illinois.*

Enter 205 on Reader Card

New spherical roller bearings have top capacities



Large convex rollers



High inner race shoulders



Bronze retainers

THREE MAJOR design improvements have been combined to produce the highest-capacity spherical roller bearings yet developed, the maker reports. The three features of the self-aligning units are: maximum diameter and quantity of convex rollers for each bearing size, precision-machined, centrifugally-cast bronze retainers and high, heavy inner race shoulders.

The new bearings are being introduced initially in series 22200 and 22300, in bore sizes ranging from 1.5748 in. to 11.0235 in., with dynamic load ratings up to 288,000 lb. The bearings also will be available in pillow blocks in bore sizes ranging from 1 7/16 in. to 10 in.

With the most and biggest convex rollers, the units have the highest capacity of any spherical roller bearings, according to the manufacturer. Centrifugally-cast bronze retainers assure smooth, quiet bearing performance even under extreme speeds and loads. The higher, heavier inner-race shoulders make it possible to assemble

Hydraulic cylinders

HYDRAULIC CYLINDERS are designed for operating pressures up to 2,000 psi. in both oil and air operation. Two types of internal construction fit the needs of all types of industries. Cylinders are all steel constructed, using the latest type packings.

Optional stroke lengths, pipe ports and mountings enable engineering design changes in equipment without costly major overhauls. The heavy-duty, hard-chrome-plated piston rods eliminate corrosion and withstand heavy side loads without deforming. Molded wipers in all cylinders prevent abrasive materials from entering and returning through entire hydraulic lines.

Heavy cylinder tube walls used are designed to withstand high surge pressures and prevent side strain distortion. Both cylinder designs utilize all features considered extras. Standard types are single and double-action, double-end rod, pull-type and two cylinders in one. *Unit Mfg. Co., 18 W. 26th St., Minneapolis, Minn.*

Enter 206 on Reader Card

or remove bearings easily from shafts with conventional shop equipment. *Link-Belt Co., Dept. PR, Prudential Plaza, Chicago 1, Ill.*

Enter 207 on Reader Card

Centrifugal pumps

A COMPLETE new line of self-priming high-head centrifugal pumps in sizes 1½ in. thru 6 in. has been introduced. Pumps will be available with base mounting, pneumatic tires or steel wheels. Units may be belt driven, flexible coupling driven, or direct connected engine driven. Sizes 1½ in. thru 3 in. are available with electric or air-cooled gasoline power. Sizes 4 in. thru 6 in. are available with electric, gasoline or diesel power. The above complete line is in addition to a complete line of low-head, high capacity self-priming centrifugal pumps and diaphragm pumps. *Rice Pump & Machine Co., Belgium, Wis.*

Enter 208 on Reader Card

(Continued on page 144)



FALK All-Motor Motoreducers driving pipe conveyors in seamless tube mill.

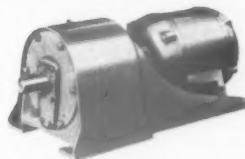
Photo courtesy of
The Colorado Fuel and Iron Corporation

You get these "extras" when you buy FALK all-steel Motoreducers

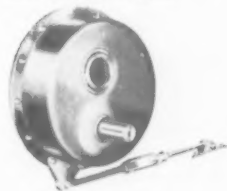
- 1. Freedom from damaged housings.** The exclusive FALK all-steel construction gives full protection from cracked housings or torn-off feet...plus twice the ability of cast iron to maintain vital alignment.
- 2. 12-15% reserve load-carrying capacity** in the gears, by AGMA standards. The extra-depth, high pressure angle helical gears are another FALK exclusive...they assure better operation and longer gear life.
- 3. Highest known gear efficiency—98½%** per gear train under full load! This means maximum productive work for your power dollar.
- 4. Longer service life**...advanced FALK design makes it possible to machine both bores for each shaft assembly at one time, thus eliminating possible accumulation of tolerances that occurs when individually machined parts are assembled. The result—better alignment of revolving elements that permits units to transmit rated capacity longer.
- 5. Standard units to fit your needs.** Integral and All-Motor® Motoreducers are available in horizontal, vertical and right angle types...a type for every use.

Units are available up to 75 hp; output speeds from 780 rpm down to 1.2 rpm. Prompt delivery from factory, warehouse or distributor stocks. Ask your FALK Representative or Authorized FALK Distributor for *Bulletin 3100*.

THE FALK CORPORATION, MILWAUKEE 1, WIS.
MANUFACTURERS OF QUALITY GEAR DRIVES AND FLEXIBLE SHAFT COUPLINGS
Representatives and Distributors in most principal cities



**THE FALK ALL-MOTOR®
MOTOREDUCER**
the original All-Motor unit
(Shown) Horizontal concentric
model. Also available in right
angle and vertical types.



**THE ALL-STEEL FALK®
SHAFT MOUNTED DRIVE**
Proved best for the countless
industrial applications where a
reducing unit mounting directly
on shaft of the driven machine is
indicated.

Units from 1/2 to 50 hp. Ratios
—4:1, 14:1 or 24:1. Torque
capacity up to 41,000 lb-in (in
standard units). Prompt ship-
ment from stock. For details,
ask for *Bulletin 7100*.

FALK

... a good name
in industry

NEW MACHINERY

(Continued from page 142)

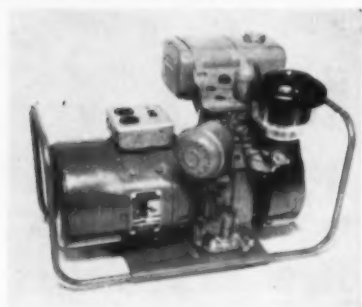
Ripper tooth

A NEW CURVED-SHANK ripper tooth has been developed. The new tooth, curved at a slight angle, virtually eliminates rock drag and slabbing. Since it has the ability to shed broken rock better, the curved shank is able to pass through tough, resistant material more easily, doing away with delays formerly required to clear the tooth of bunched-up material.

Three ripping positions are available with the new curved tooth, providing angles of entry smaller than those available with the previous curved tooth (entry angles vary with the ripping position). *Caterpillar Tractor Co., Peoria, Ill.*

Enter 209 on Reader Card

Electric generating plant



A NEW 750-w. electric generating plant is a 4-pole generator, single-phase, 60-cycle, 115-v. ac. plant with a speed of 1,800 rpm. Completely portable, the generator is for general power use. First production units incorporate a receptacle for quick disconnect, voltage pilot light and are isolated from vibration and radio noise. Each unit weighs 104 lb. The same basic electric plant is also being modified to develop 3,600 rpm. This unit will be a 2-pole, 1,500-w. generator. *Jeta, Inc., Yonkers, N.Y.*

Enter 210 on Reader Card

Grader engine

A NEW 4-CYLINDER gasoline engine for the maker's Model D motor grader has been announced. It provides 58 hp. at 1,650 rpm. to rank the Model D tops in horsepower among motor graders in the 8,800-lb. weight class.

Maximum power and fuel economy are provided by its accurately controlled combustion chamber formed by crater-shaped pistons. Turbulence thoroughly mixes and vaporizes the air-fuel charge, causing complete com-

bustion. Full horsepower at low engine speed of 1,650 rpm., and a high 7.25:1 compression ratio give added efficiency.

Simplified adjustments and conveniently located service points promote preventive maintenance to extend the life of the motor grader. *Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.*

Enter 211 on Reader Card

Cold belt vulcanization

CHEMICAL VULCANIZATION is fast becoming the most popular method for repairing damaged belt conveyors, because of the speed and economy of repair. With Pang compounds vulcanization is suspended until a chemical activator is added. Curing takes place at temperatures ranging from 65 to 125 deg. F.

Pang works equally well in correcting breaks that occur on the edges, in impact breaks and where fabric needs replacement. Splicing can also be accomplished with the system, the manufacturer reports. The process is economical, for unlike hot vulcanizing methods which require several men to operate presses, vulcanizing is done

in a matter of minutes by one person with the Pang method. *Automatic Vulcanizers Corp., 16 Hudson St., New York 13, N.Y.*

Enter 212 on Reader Card

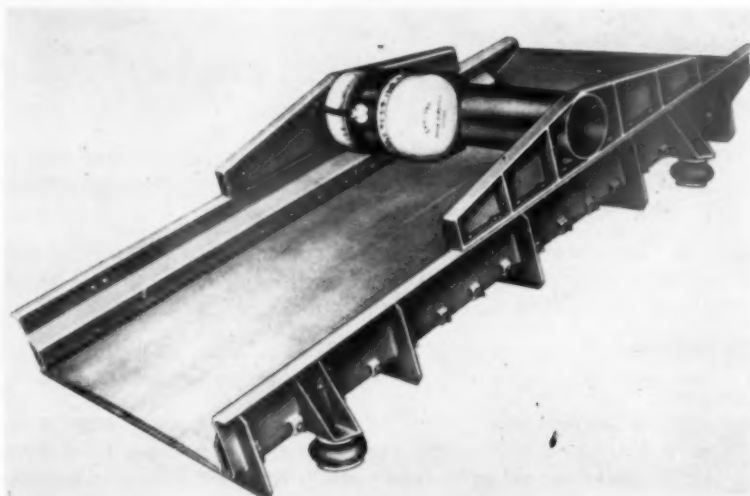
Portable compressor



AN ADDITION to the current 600 cfm. portable rotary compressor class has been announced. The new unit is equipped with Cummins engine model NH-220-B1, and features a unique "over-under" design that puts the first stage compressor cylinder directly over the second stage. It has self-draining cylinders, a silent chain drive and is equipped with two filters. *Worthington Corp., Harrison, N.J.*

Enter 213 on Reader Card

Vibrating screens have integral motors



A NEW "unbalanced-motor" electromechanical vibrating screen has been announced. The screen will effectively handle most materials ranging in size from 100 mesh to 3-in. lumps. It is available in two models, the SS-146 with a 4 x 6-ft. screen surface and the SS-1510 with screening area of 5 x 10 ft.

Both models can be furnished as single or double-deck screens with either 900 or 1,800-rpm. drives. They can be arranged for base or suspen-

sion mounting, either way utilizing newly developed pneumatic vibration-absorbing mounting members, which prevent transmission of vibration from the machine.

The drive units are powerful, self-contained unbalanced electric motors. Their use eliminates the need for belts, chains and separate motor mountings. *Syntron Co., 450 Lexington Ave., Homer City, Pa.*

Enter 214 on Reader Card

(Continued on page 147)



Lima Austin-Western 101-SE portable crushing and screening plant travels narrow mountain trails to reach such remote end-use site as this, where it produces high tonnage of low cost construction aggregate.

Portable Lima Austin-Western 101-SE crushes, screens 160 tons hourly for Colorado contractor

"There are many reasons why we like our Lima Austin-Western 101-SE portable crushing plant," says Dean McClellan, of Oliver & McClellan Construction, Cortez, Colo. "Features that have paid off especially well for us are portability, push button control and high production at low cost."

Portability a must

"In this part of the country, and in our operation particularly, portability is a must. We move our 101-SE in the mountains over nothing but Jeep trails. Yet we never worry about its upsetting.

"One-man push button electric operation is great, too. The operator sits where he can see the whole plant—he can control any operation all by himself.

"We are more than satisfied with the high production of our 101-SE. Colorado rock has a reputation for being mighty hard to crush. But with our crusher, it

breaks up easily. On a recent job our 101-SE produced 1½ in. minus base material, in 70% crush, at an average rate of 160 tons per hour! In my book, that's good production," Mr. McClellan said.

Diesel, electric power

The 101-SE is a completely portable, rubber mounted, self-contained crushing and screening plant. Diesel engine drives crusher and generator, which powers all other operations. Electric drives eliminate troublesome clutches, chains, sprockets and gearboxes . . . simplify maintenance, help reduce cost per ton. Portable plant capacities range from 25 to over 200 tons per hour.

Keep pace with your cost and progress estimates . . . keep haul cost and time low. There is a high-speed, profit-making Lima Austin-Western plant, portable or stationary, exactly right for your needs. Send for all the facts and the name and address of your nearest distributor.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA AUSTIN-WESTERN Crushing, Screening and Washing Equipment
BALDWIN · LIMA · HAMILTON
 CONSTRUCTION EQUIPMENT DIVISION • LIMA, OHIO




5917

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ROCK PRODUCTS, March, 1959

145

The **Dayton Rubber Co.**  Dayton, Ohio

Dayton Cog-Belts Save \$475.00
In 4½ Years of Continuous Quarry Operation

These are the Facts:

Application Telesmith Breaker, size 13B

Drive Conditions Previous belts failed in 6 to 9 months, their covers shredded by grit and abrasive dust.

Cog-Belt Results Original raw edge construction
Cog-Belts are still in use after 4½ years.

Cog-Belt Savings \$475.00 in belt replacement costs
plus the downtime required for repeated belt changes.

ONLY DAYTON MAKES THE COG-BELT!

See BELTING in the yellow pages of your telephone directory
for the name of your local Dayton distributor or write
The Dayton Rubber Co., Industrial Division, Dayton 1, Ohio



NEW MACHINERY

(Continued from page 144)



Front-end loader

THE MODEL HF Payloader is being replaced by the new H-30R model, which has a carry capacity of 3,000 lb. at average operating speeds and is a rear-wheel-drive, front-wheel-steer machine. Buckets from $\frac{3}{4}$ to 2 cu. yd. are offered for the handling of various materials within the rated capacity of 3,000 lb.

The bucket action of the H-30R provides 40 deg. of tipback. The model has a torque-converter with a 2.6 to 1 stall ratio and a four-speed, full-reversing, manually shifted transmission. It is powered by a 6-cyl. Hercules gasoline engine developing 66.5 hp. at 2,200 rpm.

Among the attachments available for the H-30R are the Wain-Roy rear-

mounted backhoe; backfiller blade; lift fork; crane hook; and cabs. Optional equipment includes double-acting cylinders for down-pressure, steering-booster attachment and special buckets. The Frank G. Hough Co., 705 Seventh Ave., Libertyville, Ill.

Enter 215 on Reader Card

Rotary air compressors



A NEW LINE of portable rotary air compressors features Perma-Vane rotor blades. Of special solid material, the blades are said to have greater wear resistance than those used in most rotary machines. Their light weight and minimized friction are said also to reduce horsepower required. Blades move continuously in a straight line from the stator center. They cannot cock or bind.

The new line includes portable com-

pressors of 125 to 600-cfm. capacity with volumetric efficiencies up to 92 percent. The compressors also are said to have 50 percent fewer working parts than others of the same capacity. Davey Compressor Co., Kent, Ohio.

Enter 216 on Reader Card

Big downhole drill

A NEW DOWNHOLE DRILL weighing 460 lb. and using a Carset bit weighing 126 lb. is now on the market. A bigger bit means greater hole spacing is possible and consequently fewer blast holes need to be drilled. The larger charges of powder that can be used and the wider spacing mean less costly quarrying.

The downhole drill, available now in four sizes and in bit diameters of $4\frac{3}{4}$ to 9 in., gains its efficiency from its hammer blows striking the bit directly. No power is lost through rods, couplings, etc., because the unit is right behind the bit. The air-powered drill's compact design allows it to follow the bit into the ground. Thorough hole cleaning lengthens drill and bit life and increases drilling efficiency, because the machine is drilling rock and not rock chips. Ingersoll-Rand Co., 11 Broadway, New York 4, N.Y.

Enter 217 on Reader Card

(Continued on page 148)

The proper bucket application gives you maximum cable life

New Blaw-Knox Booklet tells you how

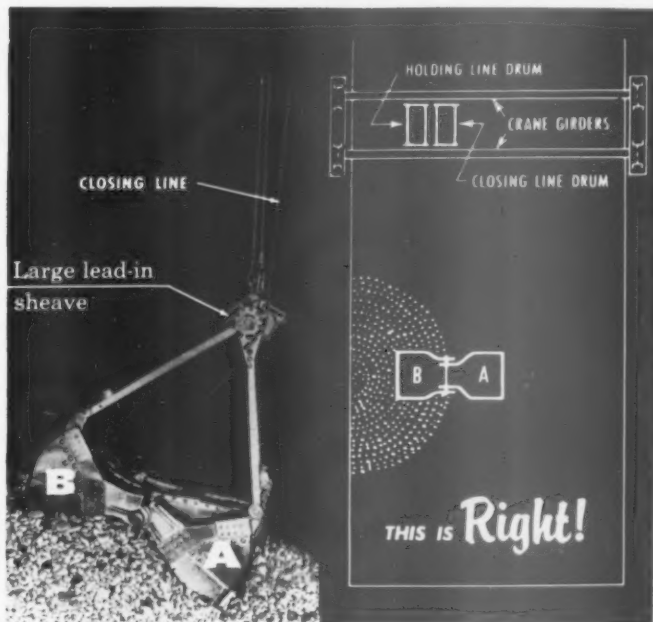
Bulletin 2510 illustrates and describes in pictures and text the proper relationship between:

1. Preferred or required direction of bucket opening.
2. Location and contours of the pile of material.
3. Position of the holding and closing drums in the crane trolley.

Users report amazing increases in cable life as well as improved bucket performance as a result of applying these practical suggestions. A copy of Bulletin 2510 is yours without obligation. Write for a copy today.

BLAW-KNOX COMPANY

Blaw-Knox Equipment Division
Pittsburgh 38, Pennsylvania



Enter 1230 on Reader Card

ROCK PRODUCTS, March, 1959

Enter 1224 on Reader Card

147

NEW MACHINERY

(Continued from page 147)



Torque-tilting motor base

A NEW REACTION-TORQUE tilting motor base for automatic belted-drive tension control under changing load conditions has been announced. Available in bases to accommodate all NEMA sizes through frame 505 as well as for special applications requiring larger frames, the new reaction torque motor base makes possible more efficient use of space because of its compact design.

Engineered on the principle that action and reaction are equal but opposite, the motor base's reactive torque is directly proportional to the horsepower. The belt tension increases and

decreases as the load varies. *Allis-Chalmers Mfg. Co., Milwaukee 1, Wisconsin.*

Enter 218 on Reader Card

Crawler erecting crane

THE 1010 CRAWLER erecting crane is said to possess superior stability combined with a lifetime capacity of 100 tons with a 50 or 60-ft. boom at 15-ft. radius.

The 16 ft. 10 in.-wide crawler assembly is constructed of alloy steel with integral axle extensions. The wide spread lower feature provides the required stability to handle 200-ft. of boom or more.

Prolonged crawler life is assured, according to the manufacturer, by a design which combines single roller construction with renewable pin crawler shoe drive.

A separate, gear-driven travel mechanism is actuated through an air-controlled coupling. Power for swing is transmitted electromagnetically. This swing assembly does away with the need for friction swing clutches, eliminates lining replacements, adjustments and maintenance required with conventional assemblies.

The crane also features an independent planetary boom hoist with

single-direction cam clutches, designed to provide positive control of the boom. Planetary load lowering maintains precise control for both the heaviest lifts and long-range spotting. *Harnischfeger Corp., 4400 W. National Blvd., Milwaukee 46, Wis.*

Enter 219 on Reader Card

Coater and blender

A NEW COATER and blender, believed to be the first that will coat or blend on a continuous basis, has been placed on the market. Called the Impingatron, the unit will blend or coat particles ranging from ¼-in. down to micron sizes and make liquid mixtures with as little as ½-percent liquid as well as slurries. Only the feed arrangement limits the number of solid and liquid materials which may be blended or coated. Once the feed arrangement is set so that the solids and/or liquids are delivered to the Impingatron in the proper proportions, dispersion and blending are said to approach 100 percent uniformity.

Equipped with a 28-in. dispersing unit, the Impingatron has a capacity of 400 cu. ft. per hour. *O'Brien Industrial Equipment Co., 1596 Hudson Ave., San Francisco 24, Calif.*

Enter 220 on Reader Card

(Continued on page 150)

EHR SAM CUSTOM-BILT

BUCKET ELEVATORS

EHR SAM custom-bilt bucket elevators are designed to handle all materials from sand to rock. These units are an efficient method of conveying material by giving a low-repair and low-production cost.

EHR SAM has been known since 1872 for rugged, well-engineered equipment. For years of trouble-free, dependable service... Buy the Best **BUY EHR SAM**.



Low Initial Cost
Minimum Operation
Cost
Easy Installation

Centrifugal Type
Continuous Bucket
Type
All-Steel Construction

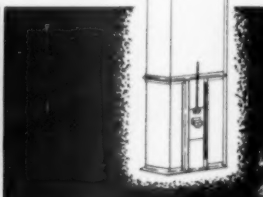
Full Capacity
Ample Discharge
Non-choking Boot



Aggregate Plants



Sand Plants



Concrete Plants

Designed and Built by: **The J. B. Ehrsam and Sons Mfg. Co., Enterprise, Kansas**

SALES OFFICES:

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WILKS-BERMEL CO.
CARL THOMER CO.

SAN FRANCISCO, CALIFORNIA
LANCASTER, NEW YORK
MINNEAPOLIS, MINNESOTA

Enter 1225 on Reader Card

A big machine for a big job

Manitowoc dragline brings down 50 foot face of gravel . . . then re-handles the material by dredging 45 to 50 feet below water to supply Standard Slag Company washing plant.

The Standard Slag Company's Crystal Springs washing plant near Massillon, Ohio runs through 225 tons of gravel an hour to operate at top capacity. A Manitowoc Model 4500 dragline with a 5-yd. bucket is used as the primary producer of gravel for the plant. The drag is diesel-powered and is equipped with a 140-ft. boom, providing the great reach needed on this tough job.

The Manitowoc performs two functions: it reaches 50-ft. to pull gravel down into a lagoon, then re-handles the material by dredging for it 45 to 50-ft. below water level. From the lagoon the gravel is placed on a surge pile, except for a few cobbles larger than 24 inches in diameter. Under the center of the surge pile a reciprocating plate feeder moves 225 tons per

hour of gravel to an 1,800-ft. conveyor system leading to the processing plant.

The Manitowoc Model 4500 dragline is ideally suited to big scale operations of this sort because it combines unusual stability and long reach with a fast cycle and direct power flow. Modern, balanced design has produced a dragline with a big capacity, yet with the mobility of a two or three-yard rig.

And note that the Model 4500 has no clumsy electric cable trailing behind . . . no expensive, troublesome power installations to maintain. Low cost, easily-understood diesel-power lets you move quickly from one job location to another without the problem of available power. Moving long distances is just as simple, because this modern Manitowoc can be shipped on railroad flat cars and erected in three to five days.

There's a lot more to this story . . . including convertibility to a big, 5½-yd. shovel or 100-ton crane. Get all the details . . . give your Manitowoc distributor a call right now!



SHOVELS 1¼-yd. — 5½-yd.

DAGLINES 1¼-yd. — 6-yd.

Manitowoc

MANITOWOC ENGINEERING CORP.

(A subsidiary of The Manitowoc Company, Inc.)

MANITOWOC, WIS.

NEW MACHINERY

(Continued from page 118)



Motor grader

THE NO. 14 MOTOR GRADER, rated at 150 hp. and weighing more than 29,000 lb., has been brought out as the largest, most powerful motor grader in its maker's line.

The use of 10.00-in. rims for the 14.00 x 24 tires provides a wide rim base, reducing any side-rolling tendencies. About 75 percent of the machine's weight is on the drive wheels where it can be used to give the unit traction.

Power is provided by a turbo-charged engine which has an 18-percent torque rise—extremely high for this classification of machine. This engine is the first motor grader power unit equipped with a turbocharger.

Forward travel speeds range from 2.6 mph. in first gear to 21.6 mph. in sixth. The 12-ft. blade, with its higher mold-board and 5-in. clearance between blade-top and circle drawbar,

gives the No. 14 the ability to carry large amounts of material on the blade without interference with its flow. *Caterpillar Tractor Co., Peoria, Ill.*

Enter 221 on Reader Card

Conveyor idler

A SPIRAL-SHAPED rubber idler for belt conveyors has been developed to handle aggregates, cement and other bulk materials. The new idler, adaptable to any type of belt conveyor, is made of synthetic rubber molded around a wire rope. Although the idler is smaller in diameter and lighter in weight than conventional all-metal idlers, the manufacturer claims it carries the conveyor belts which ride over it smoothly and efficiently under either heavy or light loads.

Its principal advantages are listed as follows: (1) Self-cleaning action produced by constant flexing from end to end prevents build-up of wet, sticky materials. (2) Flexibility enables it to readily conform to variations in the belt load, thus providing more uniform conveyor operation. (3) Mounting brackets on either end of the idler permit free pivot in the vertical plane with the result that the idler hangs naturally and conforms readily to off-center loads. (4) Replacement is easily accomplished by lifting

out worn idlers and dropping in new ones without removal of bolts, frames or other holding devices. (5) Intrusion of dirt into moving parts is prevented by newly developed seals. (6) Torsional strength resulting from the continuous rubber spiral insures long life and reduces internal twisting. *Hewitt-Robins, Inc., 666 Glenbrook Rd., Stamford, Conn.*

Enter 222 on Reader Card

Gear reducer

A COMBINED gear reducer and gear-shift drive unit, giving four or eight speeds on the output shaft of the reducer, has been announced.

The new line includes double and triple gear reduction units. Motor capacities are rated from 1 to 10 hp.

Standard electrical characteristics of the new gear reducer combination are: constant-torque, two or three phase, 60-cycle, and 208, 220/440 or 550 v. Special voltages and frequencies along with mechanical modifications are available. If required, it is possible to furnish constant horsepower output in all four speeds with selection of proper gear reducer. *The Lima Electric Motor Co., Inc., Department 205, Lima, Ohio.*

Enter 223 on Reader Card

(Continued on page 152)



"Our hammer mill proved it—

**Only Colmonoy No. 1 hard-facing
lasts so long, costs so little!"**

Colmonoy No. 1 hard-facing stands up under rough conditions involving impact and abrasion. Its cost is moderate and it welds easily. Great on equipment like dozer blades, shovel teeth, crusher rolls, and conveyor parts.

The new low-hydrogen coating provides excellent arc stability and makes weld cleaning between successive passes unnecessary. You can use it on vertical surfaces, too. Colmonoy No. 1 deposits are hard: 58 to 63 Rockwell C.

Write today for more information about Colmonoy No. 1 and the rest of the Colmonoy line of hard-facing alloys.

HARD-FACING ALLOYS

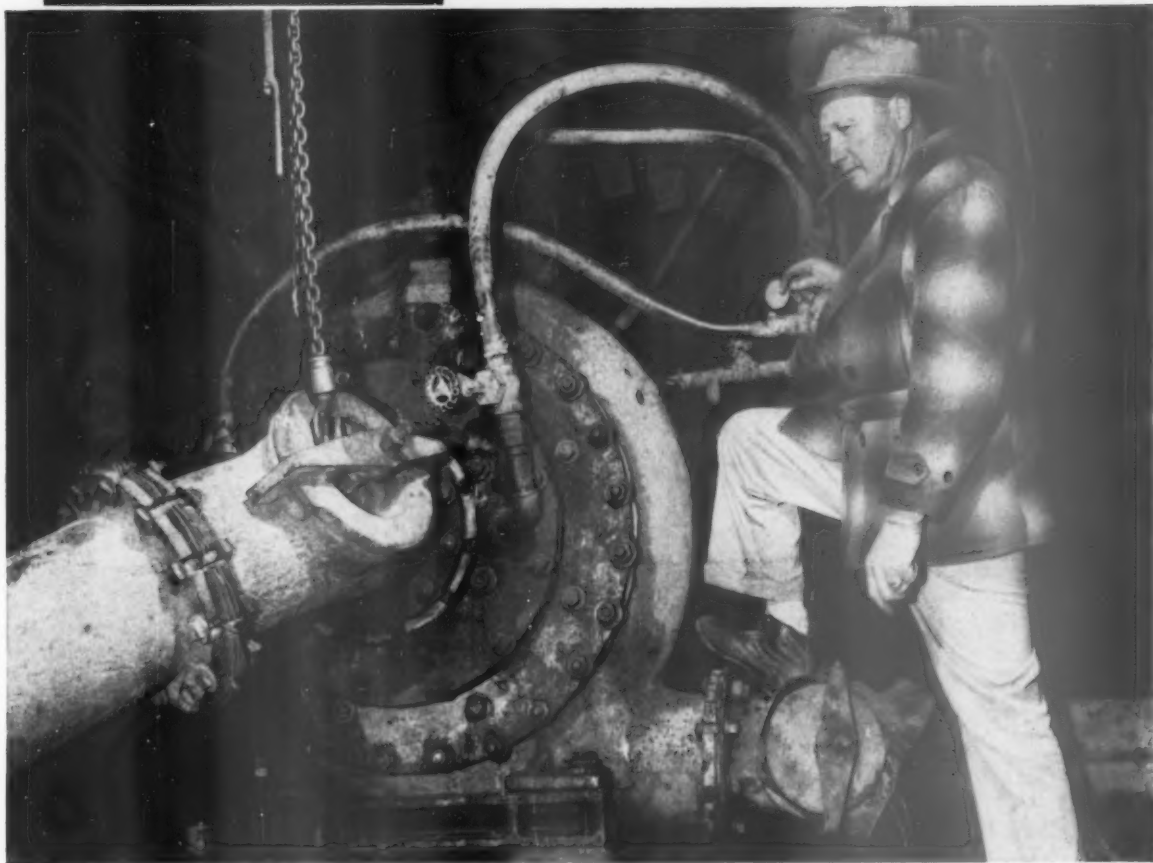
WALL COLMONOY

BIRMINGHAM • BUFFALO • CHICAGO • HOUSTON • LOS ANGELES
MORRISVILLE, PA. • NEW YORK • PITTSBURGH • MONTREAL • GREAT BRITAIN

Available as 1/8, 3/16, and 1/4-inch diameter electrodes (DC), in 10-pound metal containers.



Enter 1226 on Reader Card



"Complete change-out for this 8-inch Amsco takes only 8 hours . . ."

"This Amsco pump design is really simple," says Mr. R. O. Pruitt, Plant Superintendent of Makins Sand & Gravel Company, Oklahoma City manufacturers of ready-mix concrete and asphalt.

"It's so simple, we never take more than 4 hours from shut-down to on-stream for replacement of either impeller or suction liner." A complete change-out, impeller and suction liner never requires more than 8 hours.

"Maybe this easy repair is one of the reasons we've used Amsco pumps for

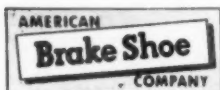
about 40 years now. We've got this 8-inch Amsco and a 6-inch Amsco working the pit together," says Mr. Pruitt.

"We get about 200 hours service out of liners, impellers and shells before rebuilding by welding. That's pumping a 50-50 sand and gravel mix," he adds.

Makins' 8-inch Amsco pump is driven by a 150 h. p. electric motor, flat-belt drive, using plain suction. Pipeline is 91' with a 40' lift. The pump lifts sand and gravel to classifying equipment.



Amsco® Dredge Pump standard sizes range from 6" to 20" discharge openings. Larger sizes are also available. Ask for an Amsco pump engineer to discuss your requirements. Or write for Bulletin 1052P, containing full information and specifications on the Amsco line.



AMSCO

American Manganese Steel Division
Chicago Heights, Illinois

**Make
your own hot
mix!**



White L-20 ASPHALT PLANT

**SAVE
\$200
A TON**

Make your own hot mix asphalt with this new WHITE plant and save about \$2.00 a ton. At its capacity of 240 tons a day, that's savings of \$480.00 a day. Thirty-one of those days pay for the L-20!

Produces any type mix you can get from a \$100,000 plant: AC, RC, MC, SC and emulsified for top course, base course, one course, or patch. Two men operate. Capacity is rated at a hot 315 degrees.

Available either portable or stationary, the L-20 will supply black-top for suburban streets, driveways, parking lots, school yards, or state highway maintenance. See nearest White distributor or mail coupon.



TAR KETTLES

TROWELERS

VIBRATORS

*Manufacturers of
quality construction equipment
since 1925.*

MAIL COUPON FOR FREE LITERATURE

White Manufacturing Company, Elkhart 16, Indiana

Please send literature on L-20 Asphalt Plant.

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☐ Dealers: Check here
for franchise avail-
ability in your area.

Enter 1227 on Reader Card

NEW MACHINERY

(Continued from page 150)



Tractor shovel

A TRACTOR SHOVEL, the Henry 900, has been designed specifically for the Fordson Major tractor. The shovel has a self-leveling bucket, bucket position indicator, and many other features as standard equipment. Break-away capacity is 5,000 lb. and lifting capacity is 3,000 lb. to a full height of 9 ft.

Smooth, quick, lifting is powered by two lift cylinders. Two bucket cylinders furnish power for bucket operation. With a relief valve setting of 1,500 psi. the Henry 900 operates with a pump capacity of 23 gpm. at 1,800 rpm.

Two different bucket sizes are available: a 60-in. bucket having a capacity of $\frac{3}{4}$ cu. yd. heaped or $\frac{5}{8}$ cu. yd. struck and a 66-in. bucket with a capacity of $\frac{7}{8}$ cu. yd. heaped or $\frac{3}{4}$ cu. yd. struck. *Henry Manufacturing Co., Inc., Topeka, Kan.*

Enter 224 on Reader Card

Diesel generating plants

A NEW SERIES of water-cooled, diesel-driven electric generating plants has been announced. Series DZB generating plants are available in either 10,000 or 15,000-w. ac. size ranges and in all standard 60 and 50-cycle voltages to 460 v. Completely self-contained, these new diesel-driven generating sets will provide electric power for both primary power applications for producers, where a continuous source of electricity is needed, and all types of emergency standby power jobs where low-volatile diesel fuel is preferred over gasoline.

Prime mover for the new DZB series of electric plants is the heavy-duty, 3-cyl. 37 hp. (at 1,800 rpm.) Hercules DD 149 engine. Standard features include a Roosa Master distributor-type, direct-injection pump with a built-in fuel transfer pump. *D. W. Onan & Sons, Inc., Minneapolis, Minnesota.*

Enter 225 on Reader Card

(Continued on page 154)

"READY-TO-USE" DYNATEX* COSTS LESS THAN PRILLS

Extensive tests conducted in open-pit mines and quarries have shown that Dynatex produces rock or ore at a lower cost than prilled ammonium nitrate-fuel oil mixtures.

These tests, conducted under actual working conditions, proved that Dynatex permitted an increase in the distance between drill holes as well as an increased burden. Economies were effected all along the line. The explosives loading factor was reduced, as were loading time, labor, drilling, and blasting costs.

If you have, or are now using, a prilled ammonium nitrate-fuel oil mixture, be sure to test Dynatex on your next blast. Our technical representatives will be glad to show you how Dynatex blasting agent can cut your costs, too. Phone or write our nearest branch office for complete information.

NO FUSS—NO MUSS. No mixing on the job—Dynatex is delivered ready for use.

QUICK LOADING. In cartridges, Dynatex is quickly loaded into bore holes. Where conditions permit, Dynatex may be poured into bore holes.

UNIFORM STRENGTH AND QUALITY. Dynatex is a blasting agent of uniform known strength and dependability.

CHOICE OF PACKING. Dynatex is available in multiwall paper, special burlap or Flexo-Bag® containers, or in fiber drums of standard diameters.

*Hercules trademark



KR59-1

Explosives Department
HERCULES POWDER COMPANY

INCORPORATED
900 Market Street, Wilmington, Delaware

Birmingham, Ala.; Chicago, Ill.; Duluth, Minn.; Hazleton, Pa.; Joplin, Mo.; Los Angeles, Calif.; New York, N. Y.; Pittsburgh, Pa.; Salt Lake City, Utah; San Francisco, Calif.

ROCK PRODUCTS, March, 1959



HERCULES

Enter 1222 on Reader Card

HAYWARD CLAMSHELL BUCKETS



**WORK LONGER,
WORK FASTER,
WEAR LESS!**

Designed with rugged, one-piece alloy shells... wide type, cast manganese steel cutting edges... smooth shell interior for fast, capacity loads and easy discharge... manganese bushings... diagonal truss brace to keep shell in line... has no side sway or back lash... plus many other cost-cutting design features!

Get complete details. Write today for illustrated bulletin.

THE HAYWARD COMPANY

50 CHURCH STREET, DEP'T R, NEW YORK 7, N. Y.

Builders of Better Buckets Since 1888

Enter 1228 on Reader Card



BROOK ELECTRIC MOTORS ARE BEST!

All things considered, BROOK A. C. MOTORS are best for powering crushers, screens, washers, apron feeders, and conveyors in sand and gravel pits and quarries. They are built for dependable, maintenance-free, all-weather service under severe conditions. Yet, they cost less than ordinary motors. 1 to 600 H.P. Warehouse stocks, factory representatives and dealers coast-to-coast. Send for literature.

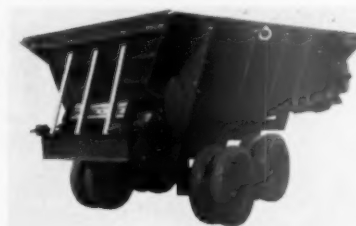


world's most respected motor
BROOK MOTOR CORPORATION
3553 W. PETERSON AVE., CHICAGO 45, ILL.
In Canada: Brook Electric Motors of Canada, Ltd.
250 University Ave., Toronto, Ontario

Enter 1229 on Reader Card

NEW MACHINERY

(Continued from page 152)



Portable apron feeder

AN EXTRA HEAVY-DUTY, portable long apron feeder for handling quarry rock and boulders to the primary crusher has been developed.

The feeder is transported on dual-tandem rear wheels and is pneumatic-tire equipped, with equalizer. Fifth-wheel hitch is provided for towing. When desired the feeder can be ordered without the wheels, axles and tires. Hydraulic brakes are optional, as are steel wheels. Weight of feeder is approximately 45,000 lb. Overall width is 8 ft. 6 in. and power requirement, 25 hp.

Length center-to-center between head and tail shafts is 30 ft. Width is 42 in. Pans are 1/2-in. thick forged steel, mounted on heavy-duty chain riding on steel rollers keyed to the supporting shafts. Pioneer Engineering, Division of Poor & Co., Minneapolis 14, Minnesota.

Enter 226 on Reader Card

Bin vibrators

TWO NEW MODELS have been added to the recently introduced line of V3B unit (bin) vibrators. These latest models, the V3B-40P and V3B-40S, new impact (P) and semi-noiseless (S), are for bins, chutes, hoppers, etc., of about 20 cu. ft. capacity and with wall thickness not exceeding 3/16 in.

The vibration set up by these units assures a steady flow of granular, lumpy or powdered material by eliminating clogging, bridging or packing.

Controls are not necessary, but when they are used the performance of the vibrators can be adjusted to match variations in product or loading conditions. The ac. control unit consists primarily of a wire-wound potentiometer with suitable switching and connection elements.

The semi-noiseless vibrator (Model 40S) is also available designed and constructed for installation in hazardous, dusty locations. This specially built unit is designated MV3A-40S. Eriez Mfg. Co., Erie 6, Pa. **END**

Enter 227 on Reader Card



At Longhorn Portland Cement Co. plant, San Antonio, Texas, this 22-ton Plymouth locomotive hauls limestone rock from quarry to plant 55-hours a week, all year 'round.

"Plymouth Diesel makes over 17,000 round-trips per year — keeps production rolling smoothly"

"Hauling 4800 tons of limestone rock per day from quarry to mill calls for plenty of speed, power and stamina on the part of the industrial locomotive doing the job," says Mr. Gaines Voigt, superintendent of the Longhorn Portland Cement Company plant, San Antonio, Texas.

"A 22-ton Plymouth Diesel equipped with Torqomotive Drive performs this task for us efficiently and economically—makes a round-trip of more than one-mile every 8½ minutes to keep production rolling smoothly. Our Plymouth pulls 6 cars at a time—72 tons per load—

completes over 17,000 round-trips per year under rugged operating conditions."

Find out today how Plymouth's high operating efficiency and low operating cost can make your hauling, switching and spotting jobs more profitable. For complete information on a Plymouth built specifically to meet your haulage needs, simply send a brief outline of your operations to: The Fate-Root-Heath Company, Dept. A-5, Plymouth, Ohio. Purchase plans are available on gasoline and Diesel models.

PLYMOUTH[®] LOCOMOTIVES

WITH TORQOMOTIVE DRIVE



PLYMOUTH
LOCOMOTIVES
in Progressive Industry
throughout the world

please care . . . hunger hurts!

FOOD from America's farm abundance . . . milk powder, flour, cornmeal, cheese . . . is given to CARE, by the U.S. Government . . . for relief distribution in less fortunate lands. These foods are allocated after all requests from qualified U.S. relief programs have been met.

FOR every \$1 you give, CARE can pack and deliver one Food Crusade package (average, 22 lbs.) to those who need food most in critical areas of Asia, Europe, the Middle East and Latin America.

HUNGRY children and their parents, orphans, refugees, the aged and sick are reached by distributions made directly to needy families or to schools, hospitals and welfare institutions.

PEOPLE who otherwise would never get enough to eat receive this food as your personal gift: your name and address, or that of your group, go with each package, to tell them that you and our country are their friends. Send as many dollars as you can to join the people-to-people Food Crusade!

Every \$1 sends 22 lbs.
... \$100 sends a ton of food

Colombia	Hong Kong	Italy	Poland
Egypt (Port Said)	India	Korea	West Germany
Greece	Israel	Macau	and Berlin
		Pakistan	Yugoslavia



You may select the countries from those listed above.



CARE 660 First Ave., New York 16, N. Y.

Enclosed is \$_____ to send Food Crusade packages to the needy.

(Make checks payable to CARE, Inc.)

Name _____

Address _____

City _____ Zone _____ State _____

CARE Food Crusade contributions are income tax-deductible (Federal).



Modern "One-Hoss Shay"

Remember "The Wonderful One-Hoss Shay"? It ran for 100 years, each part wearing so evenly with the others that all disintegrated at the same instant!

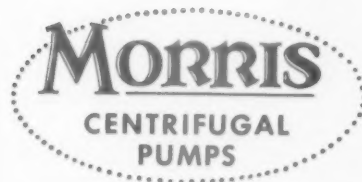
Uniformity of wearing qualities is a key characteristic of Morris Pumps. Witness the worn-out impeller from a Morris Type K pump at right. The vanes are uniformly worn to less than $\frac{1}{2}$ " thickness. The suction shroud is completely gone, except for a paper-thin portion little larger than a hand.

Yet the retention of original vane contour maintained hydraulic performance at normal levels, so that only a routine overhaul revealed the extent of overall wear.

Durability and dependability over the long pull are the *normal achievements* of Morris Pumps. They are the result of proper design backed by superior materials, careful engineering, and fine workmanship.



• Why not call on our engineers for qualified recommendations of pumps you can depend on for years of uninterrupted service.



MORRIS MACHINE WORKS BALDWINVILLE, N.Y.

MEMO TO MEN
WITH AN EYE
ON THE FUTURE:



WHERE THERE'S BUSINESS ACTION THERE'S A BUSINESSPAPER

As anyone knows who's ever tried to fix a faucet, hang a door, or change a tire—you're much better off with the proper tools at hand.

Every astute businessman knows this. He wouldn't consider for a minute attempting to do his job without having all his tools at his disposal. And his tools are comprised of information. Complete information. Sound information. Timely information.

He makes it his business to absorb all that information—from the pages of the businesspaper that he subscribes to in his particular field. He reads it for profit, not for pleasure. He reads it carefully, searchingly...looking for

facts, for new ideas and methods, for new products he can put to work. And—because he finds so much that's useful in the advertising pages—he reads them with the same concentration he devotes to the editorial pages.

Take a tip from the key men at every level in every trade and industry. Subscribe to your businesspaper. Read every issue. Carefully. Thoroughly. Searchingly.

Rock Products

THE INDUSTRY'S RECOGNIZED AUTHORITY

MACLEAN-HUNTER PUBLISHING CORPORATION

79 West Monroe Street

Chicago 3, Illinois

"Not one broken bag with **WONDERWALL**™!"



"The biggest breakage problem in our plant had been when bags were moved from one place to another by cart or hand truck. Now, with WONDERWALLS we've eliminated that problem. Three thousand tons of meal are packed in 100,000 50-pound WONDERWALLS because they do the job," Mr. Paulson says.



"WONDERWALLS stack—and stay stacked," reports Mr. Paulson. "Bags don't slip when they're piled one on top of the other. This is a great advantage from the hauling standpoint. There's no shifting in the truck or railroad car as a result of quick starts and stops. They just seem to conform to each other. WONDERWALLS stay that way until they're unloaded."

"Since we started using WONDERWALLS, we've never had a broken bag! When we were using regular kraft, we'd send out a truckload of alfalfa meal and we'd get back 10 or 12 broken bags every time. WONDERWALLS changed all that," reports H. A. Paulson, Owner, Paulson Dehydrated Products Company, Luverne, Minnesota.

An unusual case history? Quite the contrary—it's typical! Everywhere that WONDERWALLS are put to work, the report is essentially the same:

WONDERWALLS *reduce breakage in a big way or eliminate it altogether.*

WONDERWALLS outperform ordinary bags because they're made of Clupak* kraft—the remarkable paper with the built-in stretch. Result: WONDERWALLS

stand up under the rough and tumble punishment that breaks ordinary multiwalls. That's not all. WONDERWALL bags pack faster, handle easier and stack better. And save you money. There is no other bag on the market today that can match WONDERWALL performance.

Best of all—WONDERWALLS cost no more.

Try this new, superior multiwall. Order a trial shipment of 5000 WONDERWALLS on your next carload. Write Multiwall Bag Division, West Virginia Pulp and Paper Company, 230 Park Ave., New York 17.

See it at our exhibit,
AMA Packaging Exposition, Chicago



**West Virginia
Pulp and Paper**

Enter 1280 on Reader Card

*Clupak, Inc.'s trademark for extensible paper manufactured under its authority.

MANUFACTURERS

NEWS



Davis heads Gar Wood sales and advertising

DAVID J. DAVIS has been appointed director of sales and advertising for Gar Wood Industries, Inc., Wayne, Mich., the manufacturer of truck equipment and construction machinery announced recently. He joined the Buckeye Traction Ditcher Co., Findlay, Ohio, in 1940, and has been with that firm and Gar Wood in sales positions since that time. Gar Wood acquired Buckeye in 1946. He has been eastern district sales manager, tractor equipment sales manager and general sales manager, construction machinery, with Gar Wood.

Allis-Chalmers 1958 sales near 1957 level

THE 1958 SALES of Allis-Chalmers Manufacturing Co., Milwaukee, Wis., were "a little below" the \$534.2-million level of 1957, the firm announced. But the profit margin was up somewhat from 1957, when the firm earned \$17.8 million, or \$2.11 a share. While most lines except farm machinery and heavy electric-power-generating equipment were down in 1958, sales of construction equipment picked up in the last quarter of the year when the effects of the highway program were evident.

Eaton may get Cleveland gear firm

DIRECTORS of Eaton Manufacturing Co. and Cleveland Worm & Gear Co., both of Cleveland, Ohio, have approved a transaction whereby Eaton would acquire Cleveland Worm & Gear and its subsidiary, the Farval Corp., Cleveland. The plan was for 81,670 shares of Eaton stock to be exchanged on a share-for-share basis with all of Cleveland Worm & Gear's stock. Eaton noted that its new acquisition would be operated as a subsidiary firm, retaining its same personnel, products and sales policies. Cleveland Worm & Gear makes gear products not previously made by Eaton, and so supplements its line. Farval brings Eaton into an entirely new line—manufacturing centralized pressure-lubrication systems.

Falk names Scannell

THOMAS F. SCANNELL has been appointed vice president and general sales manager for the Falk Corp., Milwaukee, Wis., the manufacturer of gear drives and flexible shaft couplings announced.

Six additions to field sales offices

AMERICAN AIR FILTER CO., INC., Louisville, Ky., has announced the following additions to six of their field sales offices:

Raymond J. Dunn has joined the Shreveport, La., office of AAF's representative there, Richard L. Johnson. Don Ryan, Tom Mulvey and Larry Harlan joined Air Filter & Equipment Co., Chicago, as sales engineers. Edward A. Cruse joined the Detroit branch office as a sales engineer and Harold Bee joined the staff of Rush Co., Kansas City representative for American Air Filter.

Redding of Leeds & Northrup dies

CHARLES S. REDDING, chairman and former president of Leeds & Northrup Co., Philadelphia, Pa., died January 2. Mr. Redding had a 57-year

career with the firm, starting out as a draftsman. He then entered the University of Pennsylvania and graduated in 1906 with a B.S. degree in electrical engineering. Back with Leeds & Northrup, he had become vice president and treasurer by 1922. He also served in sales, production and development positions before becoming president in 1939. He was a president of the Franklin Institute, a Philadelphia museum "for the promotion of the mechanic arts," and president of the Scientific Apparatus Makers of America. Mr. Redding was 75.

Allen Jones is named vice president of Sly

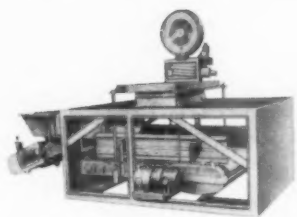
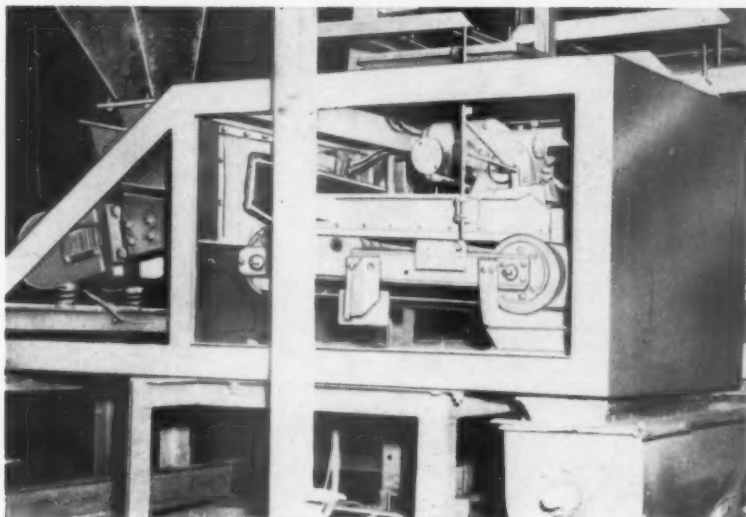


W. W. SLY MANUFACTURING CO., Cleveland, Ohio, announced recently that Allen H. Jones has been elected vice president, sales and engineering. For the past three years, Mr. Jones served as director of engineering for the firm, maker of dust control and blast cleaning equipment, industrial ovens and tumbling mills. Prior to that, he was Chicago district manager. As well as directing sales efforts, Mr. Jones will continue to supervise the firm's product improvement and new products work and customer service program.

(Continued on page 162)

SYNTRON*Weigh-Flow*

GRAVIMETRIC FEEDERS



offer controlled
automatic, continuous
feeding of bulk
materials by weight

SYNTRON Gravimetric Feeders provide automatic, continuous and accurate weigh feeding of bulk materials for mixing and blending operations.

The feed rate is electronically controlled by the load on a scale-suspended constant speed conveyor belt. Any deviation from the pre-determined weight adjusts the flow rate of the supplying feeder to precision accuracy. Keep processing equipment working at their most profitable production capacities.

SYNTRON Gravimetric Feeders will provide exact proportions of bulk materials for highest product uniformity—maintain high product quality control.

Simple and functional in design SYNTRON Gravimetric Feeders are built for long, dependable service with a minimum of maintenance.

Available in a standard range of sizes with capacities from pounds to 100 tons per hour.

Our engineers will make recommendations for your feeding by weight problem.

Write for complete catalog data—FREE

Other **SYNTRON**
Equipment
of proven
dependable
Quality



SCREENING FEEDERS



CAR
SHAKERS



DRY FEEDER MACHINES



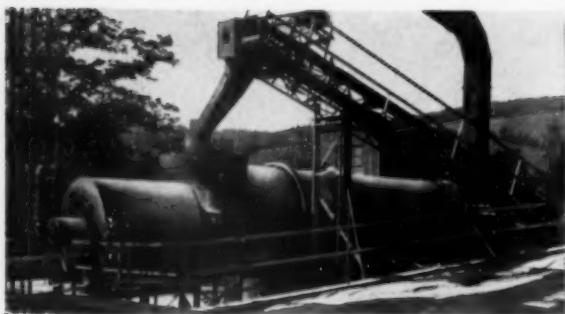
PACKERS & JOLTERS



TEST
SIEVE
SHAKERS

SYNTRON COMPANY
450 Lexington Ave.

Homer City, Penna.



7'-0" x 30'-0" oil heated rotary dryer removes excess moisture.

Unique cup shaped lifters are staggered in the unit to assure even distribution of the sand particles, resulting in greatly increased capacity and efficiency of the dryer.

A McDermott Dryer Installation at the North American Refractories Plant, Little Gap, Pa. Sound Engineering Economy and Consistently Superior Performance are built into all McDermott



Dryers . Coolers . Kilns
McDERMOTT BROS. CO.
Allentown Pennsylvania
Phone HEMLOCK 3-3231

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where there's a
**drying
operation**
leading manufacturers* insist
on **DUSTEX
COLLECTORS**

DUSTEX miniature cyclone tubes, cast of white iron, provide an ultra-hard, cling-free, self-cleaning surface to assure maximum material recovery at a constant, high-speed rate.

DUSTEX patented design prevents condensation within the collector when inlet temperature is above the dew point. Handles temperatures up to 800°F. There are no filters to clog, no sludge to pump. It's virtually maintenance free!

LOW INSTALLATION COST and up to 99.8% efficiency make DUSTEX the perfect collector for spray dryer, rotary dryer or flash dryer processes.

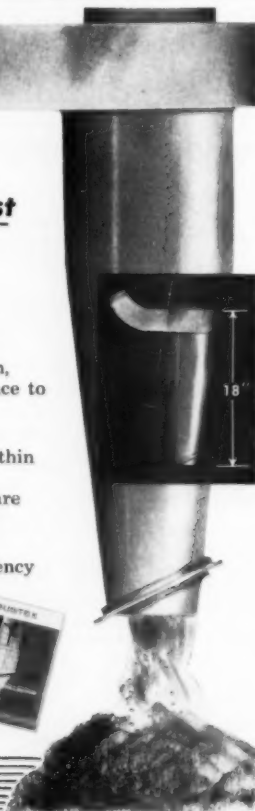
*Name on request

Write today for this free bulletin on the new D-584 DUST COLLECTOR.



P.O. BOX 2520, BUFFALO 25, N. Y.

Enter 1258 on Reader Card



MANUFACTURERS NEWS

(Continued from page 160)



IH films building of Glen Canyon Dam

"TAMING A NEW FRONTIER," a full-color sound movie of the building of \$108 million Glen Canyon Dam, has been made available to interested parties by International Harvester Co., Chicago. The film records the progress to date on the huge Colorado River project which will produce 900,000 kw. of power for the growing southwest after its completion in 1964. The birth of a new community and the monumental engineering effort are portrayed. Such scenes as a big rock blast and daring workmen dislodging rocks while riding steel cables suspended over the sheer canyon walls make the movie highly interesting.

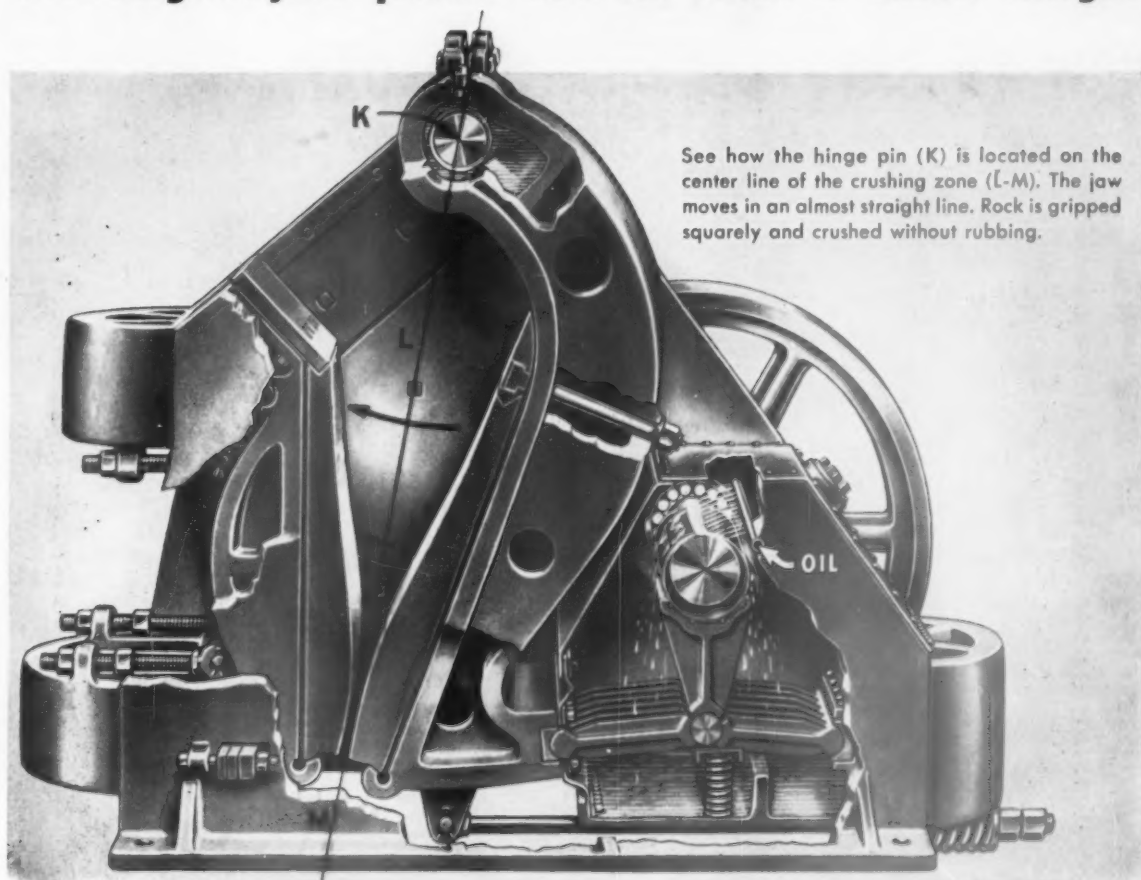
Photo shows William O. Maxwell, right, manager of Harvester's consumer relations department, presenting the first print of "Taming a New Frontier" to Wilbur A. Dexheimer, commissioner, U. S. Bureau of Reclamation. First showing was in Houston, Tex., during the National Reclamation Association Meeting. The film is available to interested parties from International Harvester Co., Consumer Relations Department, 180 N. Michigan Ave., Chicago 1, Ill., and through the company's construction equipment distributors.

Tramrail district managers

WILLIAM P. HANKS has been appointed Midwest district manager and Robert M. Underwood, Northeast district manager, of The Cleveland Crane & Engineering Co., Wickliffe, Ohio. Mr. Hanks has been with the company for 32 years and formerly was Southern district manager. Mr. Underwood was formerly located in California with the Crane Hoist and Engineering Co. in engineering and sales capacities.

(Continued on page 165)

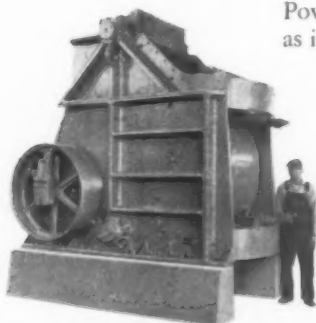
KUE-KEN[®] takes the high cost out of hard-rock crushing... jaw plates last at least 5 times longer



See how the hinge pin (K) is located on the center line of the crushing zone (L-M). The jaw moves in an almost straight line. Rock is gripped squarely and crushed without rubbing.

Rubbing, the main cause of premature jaw plate wear, is eliminated in Kue-Ken crushers by "crushing without rubbing." Gripping rock firmly and crushing squarely, Kue-Ken jaw plates are subjected to minimum abrasion giving them far longer life than any other crushers. Power consumption is less as it is not wasted in wear-

ing out jaw plates. Kue-Ken mechanism operates in a sealed, dust-free crankcase lubricated by filtered oil to permit higher speeds for greater capacity and a more uniform product. Wear is negligible and shutdowns common to conventional crushers are practically eliminated. Automatic flywheel release prevents breakage from tramp iron. Kue-Ken crushes at the lowest cost per ton. There is a size to meet every need.



Write for Catalog

KUE-KEN[®] CRUSHERS

"Crushing without Rubbing"

STRAUB MFG. CO., INC. 8387 Baldwin St., Oakland 21, Calif.

Jaw Crushers Gyratory Crushers Overhead Eccentric Crushers Revolving Screens
Classifiers Feeders Rib Cone Ball Mills Concentrating Tables Vibrating Screens

Pennsylvania Crusher Division, Exclusive Licensed Eastern Manufacturer and Distributor, 323 S. Matlack St., West Chester, Penn.

Armstrong Whitworth (Metal Industries) Ltd., Authorized Licensed Manufacturer and Distributor, Close Works, Gateshead-upon-Tyne 8, England

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Dealers:

SEATTLE, WASH. Washington Machinery Co.
VANCOUVER, B.C. Universal Equipment Co.
SALT LAKE CITY, UTAH Lund Machinery Co.
SAN ANTONIO, TEXAS Closner Equipment Co.
PORTLAND, OREGON Contractors Equipment Co.
LOS ANGELES, CALIF. Garlinghouse, Fremont Co.
BERKELEY, CALIF. West Coast Engine & Equipment Co.
PHOENIX, ARIZ. Stapley's

$\$175?$
 $\$220?$
HOW TO SAVE $\$270?$ **PER DAY...**
 $\$310?$
 $\$340?$



**USE THE
 NEW BEMIS
 EXPLOSIVES
 BAGS***

**For packing industrial explosives*

One of these figures probably comes close to the potential savings in YOUR operation when you switch from your present method to the new and improved Bemis Explosives Bags. It depends, of course, on how many holes you shoot per day, and how heavily you load the holes.

Take, for example, the figure of \$270 per day savings. It works out this way: Cans cost approximately 70 cents each. Assuming you load 10 cans per hole and shoot 60 holes per day, your container cost is \$420 per day.

But Bemis Explosives Bags cost only 20 to 25 cents each. At 10 bags per hole and 60 holes per day, that is \$150—a saving of \$270 per day.

Furthermore, Bemis Explosives Bags are the toughest *really waterproof* explosives bags you can find. Leave them in wet holes three days or more... and they still shoot perfectly. The Bemis extruded seamless poly liner provides the waterproofness; the tough burlap or Bemis Flexiply® (multi-ply creped kraft) outer tube supplies the strength.

Look for the *red stripe* which identifies Bemis-extruded *pinhole-free* poly. Write or phone us... and a Bemis specialist will see you promptly.

YOU DON'T HAVE A BAG-PACKER?

There's a simple solution to that problem... a Bemis Packer-Ette. The capital investment is surprisingly small. It maintains a steady production of six bags per minute. Two-man operation... substantial labor saving. Accuracy to 3 ounces on a 33-lb. bag. *Complete cleanliness.*



General Offices—408 Pine Street, St. Louis 2 • Sales Offices in Principal Cities

Enter 1287 on Reader Card

MANUFACTURERS NEWS

(Continued from page 162)

Sittser is Bay City VP

G. L. SITTSE is new executive vice president of Bay City Shovels, Inc., Bay City, Mich. Mr. Sittser fills a new position with the firm, one created in anticipation of company growth.

English named to fill post of treasurer

CLAYTON F. ENGLISH, executive vice president of Sturtevant Mill Co., Dorchester, Mass., has been named to fill the post of treasurer. He succeeds Joseph L. Sturtevant, who died in October. Mr. English has been with the firm since 1947.

Harnischfeger promotes Teece and Meyer

ROBERT D. TEECE has been promoted from executive engineer to assistant to the executive vice president at Harnischfeger Corp., Milwaukee, Wis. Robert E. Meyer succeeds Mr. Teece as executive engineer, after serving as chief engineer in the large excavator division since 1952. Karl

Schneider succeeds Mr. Meyer as the division's chief engineer.

In another announcement, the firm reported that net income dropped to \$45,472 in 1958 from \$3,809,765 in 1957. Sales in 1958 were \$68,952,712 as opposed to \$87,548,369 the year before. While sales to the construction and mining industries dropped during the year, the firm termed the decrease "substantially less than the national trend for these products."

Bullock becomes VP of Power Transmission

HARRY BULLOCK has been named vice president of Power Transmission Co., Denver, Colo. Mr. Bullock comes to the crusher, screen, washer and conveyor firm with long experience in these fields as supervisor in installing such jobs as the crushing, screening and washing plant at the Ghandi Sagar Dam, New Delhi, India.

Stedman opens testing lab for rock industry



STEDMAN FOUNDRY and Machine Co., Inc., Aurora, Ind., has opened a testing lab for rock producers who wish to do research into the best type of Stedman crusher or pulverizer for their needs. The lab is equipped with hammer mills, impactors and cage disintegrators. Guesswork into the per-

formance of various units can be eliminated by the equipment, which can determine accurately horsepower requirements, speeds and capacities. Screen analysis and samples of the crusher product are furnished to prospective customers.

(Continued on page 166)

PRODUCERS! SUPPLIERS!

Watch for the important
annual cement issue of

ROCK PRODUCTS

Brimful of important information vital to producers in the giant cement industry, and all who supply them

The **BIG** May Issue of
ROCK PRODUCTS

THE COMPLETE LINE of Conveyor and Transmission BELT FASTENERS



HINGED PLATEGRIP
for separable conveyor belts of any width, from 3/4 to 1 1/2" thick.



PLATEGRIP
Fasteners for conveyor belts of any width, from 1/4 to 1 1/2" thick.



STEELGRIP
Flexible Belt Lacing. 12 sizes for light conveyor and power transmission belts.



WIREGRIP
Belt Hooks—Patented alignment feature holds hooks in perfect alignment—6 sizes.



Safety
Belt Hooks—patented binder bars hold alignment and protect belt ends. 6 sizes.

ARMSTRONG-BRAY & CO.
5386 Northwest Highway • Chicago, Ill.

Enter 1260 on Reader Card

HANCO HEATED SCREEN Attachments

Eliminate Cloth Blinding
On all types of Vibrating Screens

WRITE: **F. R. HANNON & SONS**
1605 Waynesburg Rd., S.E. Canton 7, Ohio
Cable address: HANCO

MANUFACTURERS NEWS

(Continued from page 165)



E. K. Ludington, Jr.

H. B. Rue

Chase Bag elects new officers

CHASE BAG CO., New York City, announced the election of eight officers at a recent meeting. Elliot K. Ludington, Jr., is new executive vice president. Francis H. Ludington, Jr., is vice president and treasurer, succeeding Charles S. Sheldon, who retired March 1. Mr. Sheldon continues as a financial consultant. W. N. Brock has been elected vice president and director of sales. He is succeeded as vice president and general sales manager by H. B. Rue, who formerly was sales manager of the firm's textile division.

John A. Brewster is new vice president and director of west coast operations. R. H. Ayers, formerly sales

manager of the paper bag division, is now vice president of the division, succeeding E. K. Ludington, Jr. E. S. Elgin, formerly sales manager of the specialty division, is now vice president, plastics division. John A. Book is new vice president and director of industrial engineering and labor relations. He was previously director of labor relations.

Morgan to Traylor sales

JAMES T. MORGAN has been appointed sales engineer in the chemical processing machinery division of Traylor Engineering and Manufacturing Co., Allentown, Pa. A graduate of Pennsylvania State Technical Institute, Mr. Morgan had been erection and design engineer of chemical processing equipment with Vulcan Iron.

Nelson joins Koehring sales

EUGENE H. NELSON has been appointed a district representative for the Koehring Division of the Koehring Co., Milwaukee, Wis. Formerly a district representative for the firm's Parsons Division, Mr. Nelson will represent the firm in Louisiana, Texas, Oklahoma and New Mexico.

Trent heads Pangborn

RALPH M. TRENT has been elected president of Pangborn Corp., Hagerstown, Md., makers of blast cleaning and dust control equipment. In another move, the firm announced that R. H. McCauley has been made director.

Mr. Trent, with the firm 28 years, was executive vice president since 1957. He previously had been district manager in Pittsburgh, Pa., and west coast district manager.

Wilson heads Waukesha service

HARVEY N. WILSON has been named manager of the service division of the Waukesha Motor Co., Waukesha, Wis. Mr. Wilson has held many service positions in field and factory since joining the firm in 1927, the most recent being executive assistant service manager.

Joseph E. Kennedy dies

JOSEPH E. KENNEDY, chairman and former president of Kennedy Van Saun Manufacturing and Engineering Corp., New York, N.Y., died January 9. He was founder of the firm.

CONTRACT CORE DRILLING

EXPLORATION FOR MINERAL DEPOSITS
INCLUDING URANIUM & LIMESTONE — ANYWHERE

FOUNDATION TEST BORING

GROUT HOLE DRILLING

Skilled crews and complete stock of core drills
and accessory equipment maintained at all times

Core Drill Contractors for more than 60 years

JOY MANUFACTURING CO.
Contract Core Drill Division
MICHIGAN CITY, INDIANA

Enter 1262 on Reader Card

Slurries... handled at lower cost

The new WILFLEY MODEL K Centrifugal Sand Pump embodies important mechanical improvements especially adapted to the handling of cement slurry and results in stepped-up production and substantial power savings. Individual engineering. Write for details.

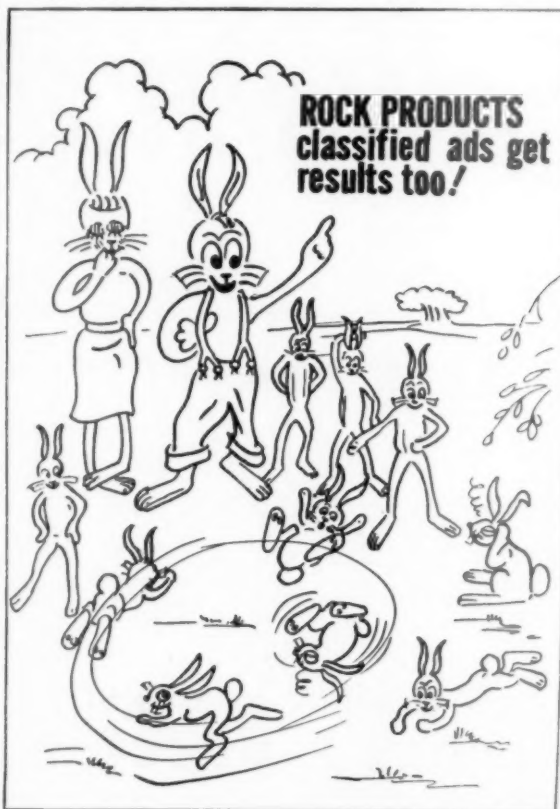
A. R. WILFLEY and SONS, Inc.
Denver, Colo., U.S.A.



Buy WILFLEY
for Cost-Saving
Performance

WILFLEY
centrifugal PUMPS

Enter 1263 on Reader Card



ANOTHER IN A SERIES OF UNSOLICITED COMMENTS PERTAINING TO ROCK PRODUCTS MAGAZINE . . .

RP

"Succinct . .
Accurate . .
Readable . ."



Charles F. Parthum
Sales Promotion Manager
BUCYRUS-ERIE COMPANY
South Milwaukee, Wisconsin

**BUCYRUS-ERIE
COMPANY**

GENERAL OFFICE
SOUTH MILWAUKEE, WIS.

September 18, 1958

P. D. Allen, President
ROCK PRODUCTS
Maclean-Hunter Publishing Corporation
79 West Monroe Street
Chicago - 3 - Illinois

Dear Mr. Allen:

I am well impressed with the new functional make-up of ROCK PRODUCTS. Trade publications such as yours are necessary to the continued growth and progress of industry, and as an equipment manufacturer, we here at Bucyrus-Erie appreciate your importance. More than ever before, publishers have a duty to offer editorial content that is succinct, accurate, and readable. I think you are succeeding admirably.

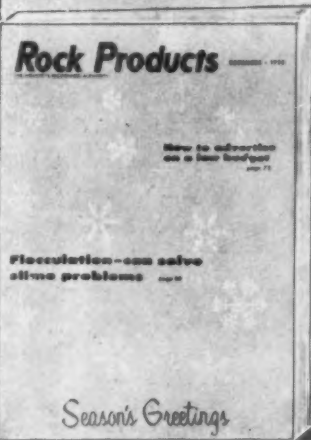
Keep up the good work!

Yours very truly,

BUCYRUS-ERIE COMPANY

Charles F. Parthum
Sales Promotion Manager

CFP:LG



In three words — "Succinct, accurate, and readable," Mr. Parthum explains the publishing philosophy that governs the editorial service of the new ROCK PRODUCTS. Topflight advertising men, like Mr. Parthum, who are successful in getting maximum readership for their advertising, recognize the importance of editorial vitality, continual research and modern format. We are grateful that Mr. Parthum and other experts recognize these "plus" values in today's ROCK PRODUCTS as sound reasons for keeping it high on their list of basic advertising buys. Why don't you take a good look at the new ROCK PRODUCTS, and see for yourself what editorial leadership means in getting maximum advertising results.

ROCK PRODUCTS A MACLEAN-HUNTER PUBLICATION

79 WEST MONROE STREET • CHICAGO 3, ILL. • RAndolph 6-2802

Also publishers of Concrete Products



The industry's recognized authority and only ABC Book.

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Rock Products Classified Advertising - Where to Buy -

Mail to: ROCK PRODUCTS, Where To Buy Dept.,
79 West Monroe St., Chicago 3, Illinois

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BY
ADDRESS
CITY, ZONE & STATE
Remittance Enclosed
Terms: 10 days after receipt of invoice

RATES FOR ONE INSERTION

Column Inches Used	Rate Per Column Inch
1-3	\$9.00
4-8	8.60
9-14	8.40
15-19	8.20
20-30	7.80

Lower rates on a contract basis.
Write for rate card.

Forms close 12th of Month
Preceding Publication

ATTACHED COPY to appear in issue(s) checked

Jan. July
Feb. Aug.
Mar. Sept.
Apr. Oct.
May Nov.
June Dec.

SPRING CLEARANCE SALE

FOUR CRANES & SHOVELS

P&H "105" 1/2 yd. Trench Hoe, mounted
Zeligson 6x6 Crane Carrier.
Lorain "TL-20" 1/2 yd. Trench Hoe, Crane,
or Shovel.
Insley "K-12" Used 1/2 yd. Trench Hoe or
Crane, 18" shoes, 8'2" wide, new 10/52,
M.M. Gas power, hoe attachment rebuilt,
bucket is new.
Lorain "TL-25" 3/4 yd. Crane or Dragline,
Cat D315 power, 1951 model. Rebuilt.

FIVE FRONT END LOADERS

Pettibone "125" Used Speedall, 1 1/2 yd.
Tractor-Shovel, 4-wheel drive, Torque-
matic Transmission, Cab, Hard Rock Lug
Tires, Marzules gas. New 8/57.
Hough "HF" Used 3/4 yd. Payloader, gas
powered.
Terratrac "500" Used Crawler Tractor-
Shovel, hyd. controlled.
I-H "I-9" R.T. Gas Tractor w/Hyd. Front
End Loader.
Barber-Greene "552" Crawler-Mounted
Bucket Loader.

FIFTEEN TRANSIT MIXERS

Smith 5 Yd. Mixers (2). Continental power,
sealed hopper, front water entry. Un-
mounted or mounted on White "2264"
Trucks.
Smith 5 Yd. Mixer, Continental power,
large water tank, rear water entry, sealed
hopper, on Dodge Tandem Truck.
Jaeger 5 Yd. Mixers (2). Continental
power, sealed door, rear water entry,
mounted LF-172 Tandem Axle Trucks.
Jaeger 5 yd. Mixers (2). Continental
power, open end, Rear water entry,
mounted LF-192 Tandem Axle Trucks.
Rex 3 1/2 Yd. Mixer, S/N TD2119 w/sealed
hopper, front water entry, 135 gal. 2-
compartment tank, Chrysler power, 202
Transmission.
Rex 3 1/2 Yd. Mixer, Continental power,
large 2-compartment tank, front water
entry, sealed hopper. Mounted GMC
6x4 Tandem.
Rex 3 1/2 Yd. Mixer, Chrysler power, 135
gal. mixing tank, front water entry,
sealed door, new 1950. S.N. TD1850.
Mounted on '53 IHC "LF174" tandem
truck.
Rex 3 1/2 Yd. Mixer, 2-Comp. water tank,
sealed hopper, rear water entry, Wau-
kesha power, un-mounted.
Jaeger 3 1/2 Yd. Mixer, sealed hopper, rear
water entry, Continental power, on
Dodge tandem truck.
Jaeger 3 Yd. Mixer, S.N. J3752, mounted
on Chev. Tandem Axle Truck.
Smith 3 Yd. Mixer, S.N. 56170, mounted
on Chev. tandem truck.
Rex 2 Yd. Mixer, w/sealed hopper, rear
water entry, 65 gallon flush tank, Allis-
Chalmers gas power, mounted on L-180
single axle truck.

CRUSHING EQUIPMENT

Dixie Port. Pulverizing Plant, 3x8 Feeder,
3x8 Cedarapids screen, 3030 Dixie mill,
30" under-discharge conveyor, GM "671"
diesel power unit. 6 years old. Over-
hauled.
Grundler Used Portable Pulverizer Plant,
w/3x8 Apron Feeder, Grunder 3x8
Mill, 30" under-discharge conveyor, 3
axles, 1957 model. Also with Onan 35
KW Generator set on 2 axles. This is a
producer and is priced "real right."
Peerless 24 x 70" Portable Belt Conveyor,
gas or electric power, swivel dual wheels.
These are the best conveyor for the
price!

NOTE: All this equipment located in our
yard except *. Some of this equipment
can be rented. Terms!

120 S. Pierpont Phone WOodland 4-6706
EIGHMY EQUIPMENT COMPANY
ROCKFORD, ILLINOIS

SPECIAL ITEMS

C-B 5530 Twin roll, 200 HP elec. motor.
Iowa 55"x60" dbl. Impact hammermill
Traylor 56"x72" sectional frame jaw crusher
Traylor 4' Model TT crusher. Numerous spare parts.
Pennsylvania Trojan heavy duty hammermill. Size
C-3-30 mang. steel hammers. 50 TPH %
Symons 4' short head coarse bowl cone crusher.

CONCRETE MIXERS

Ransome Model 648, 3 yd. tilting type
Smith 425, 4 yd. tilting type
Koehring 568 3 yd non tilting type

TRUCKS-TRANSIT MIXERS

15 Ford F8-6 yd. end dump. Excel. Reinforced, 1955
18 Mack LHSW 52 ton rear dump trucks Cummins
NHHS-600 300 HP Diesel Motor Allison con-
verter-transmission.
6 Euclid 20 TD rear dumps 15 ton cap. Cummins
13 Euclids rear dump 12 FD 15 ton; 7 Euclid
bottom dump 43 RDT 18 ton
6 Smith tan. ax. Diesel, 1952, 5 1/2 yd. mixing
4 Smith tan. ax. 4 1/2 yd. mixing

CRUSHERS-KILNS-DRYERS

JAW: Acema 18x20, 15x30, 14x30, 14x28, 10x43,
18x32, 15x32, 25x40, Eagle 10x16, 20x30, Diamond
24x36, Cedar Rapids 15x30, 15x24, 25x40,
Farrell 18x30, 18x30, 14x30, 18x36, 38x48, Bus-
hman Type C 30x42, 30x42, 18x36, 24x38,
Allis-Chalmers 30x18, Good Roads 10x30, Telamith
15x25, Universal 18x24
GYRATORY: Al-Chal 6, 7 1/2, 8, 9, 10, 12, 16, 18,
20". Telamith TY 4', 3' Gyrosphere
25B Kennedy Van Saun 12, 37 1/2, 28, 49 1/2"
ROLL: Cedar Rapids 40x20, Pioneer 40x22, 30x18,
54x24 triple roll; Telamith 24x16
HAMMERMILL: Jeffrey Type B2 24x30, Type B
36x24, 36x24, 36x24, Eagle 24x24, Steadman 24x30,
36", 42", Cedar Rapids 50-50, 30x33
BALL MILL: Hardinge conical 10'x48", 8'x48",
8'x36", complete, motors, Traylor T'435.
TUBE MILLS: Smith 6'x24", 8'x24", 8'x20",
8'x16", 8'x12" center discharge, 8x13,
8'x8", 8'x12" center discharge.
AUTOCLAVES: J&C 6'0"x58" Quick Acting; 6'x30"
CONE: Symons 36" standard and coarse bowl
KILNS: 4'x12", 5'x30", 6'x50" 8", 6'x48", 6'x72"
Vulcan 10x100, 10'6"x105", 8'x124", 6'x90", 6'x72",
DRYERS: 6'x30", 6'x72", 8'x24", 4'0"x32", 3'0"x28",
6'x30", 6'x25", 6'x24", 6'x20"

COMPB MILLS: A-C T'24", Patterson T'18
FEEDERS: Symatrol F55 48"x72", 48"x60", Jeffrey
35x72", Telamith 36"x18", Universal 36"x32"
CRUSHING-WASHING-
CLASSIFIER PLANTS
Pioneer 20 Port. Crushing Plant, 10"x18" Model
UD-2641H Diesel engine, New 1955.
Pioneer Port. 10x24 jaw 24x18 roll compl. Diesel
C-B 2640 Prim. Port. Diesel
A-W 61E 1024-1008 jaw crusher
C-B Primary Port. 22x36 Jaw, Diesel.
Eagle 38x35 single screwmill etc.
Lippman Port. WASHMORE washing plant, 80"x
18" sand classifier, 48"x72" revol. scrubber etc.
Diamond Wes-Con port. Primary 20"x36" crusher
on heavy tandem axle trailer, New.
Telamith Twin Screw sand classifier 20"x15"
Eagle 24"x25" dbl. screw washer 15 HP motor
hopper 144 bls.
Noble CA 154 Semi-automatic 150 ton 4 comp.
aggregate bulk cement silo 3000 cu. ft.
Erie Strayer port. New 1955, 40 yds. per hr. 800
bbl. cement silo
Johnson 400 yd 5 aggr. 1500 bbls. cement batch
5000 bbl. silo 3-2 yd mixers
Johnson automatic batch 10,000 bbls. cement storage
3-3 yd mixers; screening equipment.
Johnson TY 228 2 comp. 24" w/TY1200 cement unit
E.-Strayer 2, 50 T. compis. 880 bbls. cement 760
bbl. silo.
Johnson TY-227 70 cu. yd. 185 ton 3 comp. aggr.
bin TY165 batcher.
Blaw-Knox BCPG 600 bbl cement silo
B-K BCPG 400 bbl High cement bin 400 bbl silo.
Blaw-Knox BCPG 500 bbl cement bin
B-K 3 Comp. 200 yd. ag. bin, cement silo 3000
bbls., 2 Koehring 58-8 mixers, charging cement
hopper 144 bls.
B-K 3 aggr. one cement 400 bbl silo. Complete

HYDRAULIC SUCTION DREDGES
Morris 6" Diesel on 14'36" hull
Ga. Iron Works 8" suc. 6" dia. Diesel New 1957.
10' Portable Diesel powered. Complete.
12" Diesel powered, pontoon mounted. Complete.
Ellcott 8" with cutter. Diesel Hull 48"x18"x3'6"
6" Hydraulic Diesel. On 32'x28" steel pontoons
6" portable Diesel complete with cutters, etc.

SCREENS
Trommel 6'x15'3" 75 HP gearhead A.C. motor.
New Holland 4'x12' 2 deck, V-belt drive
Tyler-Hummer 4'x10' 2 deck, new spare parts
simplicity 5'x12' 2
Pioneer 5'x12' 2 deck 20 HP elec. motor
C-B 4'x14' 2 deck 25 HP motor

RICHARD P. WALSH CO.
30 Church St. New York 7, N. Y.
CO 7-0723 Cable: RICHWALB

COMPRESSORS: Ingersoll Rand PRE2, 1721,
1800, 3000 and 4500 CFM, all complete
with auxiliary equipment. Chicago Pneu-
matic 500-PB8, 100 H. P., 440 volt.

LOCOMOTIVES: 25, 44 and 80 ton, diesel
electric, standard gauge.

OVERHEAD ELECTRIC TRAVELING CRANES:
One 80 ft. span, 25 ton, 4 motor, 220/440
volt, A.C. trolley new 1955. One 56 ft.
span, 3 motor, 110 volt, direct current. The
above with or without runways and D.C.
generator.

SHOVELS, ELECTRIC: Bucyrus Erie 120-B, 5
yd. capacity and 170-B, 6 yd. capacity.

SCREEN: Tyler Tyrock F800, single deck.

BUCKET: Williams 1 1/4 yd. clam shell, ma-
terial handling.

HOISTS: Lidgerwood single drum 7' dia., 5'3"
face, 32,000 lbs. pull, 1 1/2" rope, 250 FPM,
150 or 350 H.P. motor, 2200 volts, post
brakes. Lilly control. One double clutched
drum Hoist, 10' x 10', 1 1/2" rope, 1250
FPM, post brakes.

MOTORS & CONTROLS for Mine Hoist Ser-
vice: 150, 200, 250, 300, 450, 600, 700
and 1500 H.P.

PULVERIZERS: Two Allis Chalmers 8' x 12' Rod
Mills with 350 H.P., 3 phase, 60 cycle,
2200 volt motors and control equipment.
Hardinge Conical Mills 8 x 36, 8 x 48 and
10 x 48. Tube Mills, various sizes.

JAW CRUSHERS: Traylor 15 x 24", Farrell
15 x 36", Farrell 30 x 42", Allis Chalmers,
all steel, 32 x 42". Other sizes up to 48
x 60".

AIR SEPARATORS: Raymond 5'6" Whizzer Air
Separator. Sturtevant and Gayco 10 ft. and
14 ft.

DRYERS, KILNS, COOLERS:
4 1/2' x 40', 8 x 125' and 10' x 200' Kilns.
3' x 27', 90' x 55' and 104' x 65' Dryers.
5' x 50', 5' x 60' and 6' x 50' Coolers.

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2 1/2 YD. LINK-BELT CRANE-DAGLINE. K-595.
140' BOOM & JIB. CAT. D17000 ENGINE
80 Ton GE Diesel Elec. Loco. New 1950.
44 Ton Gen. Elec. Diesel Elec. Loco.
25 Ton Whitcomb Diesel Elec. Loco.
40/50 Ton American Diesel Locomotive Crane.
New 1944.
30 Ton Browning Diesel Loco. Crane.
90 HP Lidgerwood 2d Diesel Hoist.

WHISLER EQUIPMENT CO.

1905 Railway Exchange Bldg., St. Louis 1, Mo.
CHestnut 1-4474

CRUSHERS

CONE, Symons 7' Super Standard
CONE, Symons 3', Portable
GYRATORY, Kennedy, 49, 12½", 100 HP
JAW, Mitchell, 18" x 9", 25 HP
JAW, 20" x 6"
DOUBLE ROLL, Gruendler, 24" x 24", 20 HP
RING ROLL, Sturtevant, 14" x 9½"
BABCOCK & WILCOX Type E32, 75 HP
RAYMOND, 6 Roll, Low Side, 200 HP
RAYMOND, 3 Roll, #3036 hi-side
HAMMERMILLS, PENNS. C3-30, 60 HP
HAMMERMILL, PENNA. CRUSHER #5060, Series #DNC, 400 HP, non-clog, 1952—UNUSED.
ROBINSON 36" Saw-tooth, 15 HP

DRYERS & KILNS

11' x 155' Traylor Kiln, ¾", Shell.
9' x 100' Kiln, 2-tire Vulcan
8' x 170' kilns, ¾" shell
8' x 125' Vulcan Kiln, ¾" shell
8' x 115' Long—½" shell, 2 tires.
8' x 50' Traylor Kiln ¾" shell
7'6" x 100' Kiln, ½" shell
6' x 60' Vulcan Kiln, ¾" shell
8' dia. x 70' L. Ruggles Coles, Double. Shell,
7' x 50' Allis, Double shell
6' x 50', Louisville
5'6" dia. x 50', Renneburg, ¾" shell.
5'6" x 30', ¾" Shell.
4'8" x 33', ¾" Shell.
4' x 24' L, 5 HP, brick lined kiln.

MILLS

CONICAL BALL, Hardinge 4'6" x 16", 25 HP
COMPEB, Allis Ch., 7' x 24', 450 HP
BALL-TUBE, Allis 5' x 22', 150 HP
BALL, Scrubber, Hardinge 8' x 48"
BALL, Denver 4' x 10', 60 HP
Ball, Allis 6' x 15', 150 HP
BALL, Marcy No. 64½, 125 HP
ROD, Marcy 7' x 15', 300 HP (4" liners)
Ball, Kennedy 3' x 6', 50 HP

MISCELLANEOUS

BRUQUETTING PRESSES, Komarek Greaves, 75 HP, 50 HP, 10 HP
PUG MILLS, 25, 50, 150 HP
STEEL BINS—up to 200 tons storage, all welded construction
5000'—All steel through belt conveyor, 16" & 24" rubber belts
ALSO—Steel Trough—Belt Conveyors, Bucket Elevators, Steel Screw & Flight Conveyor, etc.

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1418 N. Sixth St. Phila. 22, Pa.
POplar 3-3505

ELEC. AIR COMPRESSORS

1—3876', 1—1578' and 2—1098' Inger. Rand
DIESEL ELEC. LOCOMOTIVES
4—65 ton Whitcomb 2—25 ton & 1—70 Ton
2—45 ton & 1—80 ton & 4—100 ton Gen. Elec.
ROTARY DRYERS & KILNS
36" x 20', 5' x 25', 6' x 72', 9' x 125',
5'x35' Ruggles-Coles KA-B Dbl. Shell, Comp.
2—10' x 150' Allis-Chalmers Rotary Kilns
33" x 18' Rotary Kiln W/Drive & Burner
REDUCTION MILLS & FEEDERS
5' x 22" Hardinge Ball W/Air Class. Comp.
4' x 8', 6'6" x 14'6" & 8'6" x 12' Rod Mills
5' x 10' Kennedy-Van Saun Rod Mill
1—5'x22" Hardinge Ball Mill W/Air Class. Eqt.
2—No. 77 & 1—96 Marcy Ball Mills
4½' Symons Std. Cone Crusher
30" x 42" & 24" x 36" Pioneer Jaw Crushers
30" x 36" & 36" x 42' Traylor Jaw Crushers
25B Tel-smith Primary Breaker
36" Superior McCully Primary
20" x 36" & 24" x 36" Pioneer Jaw Crusher
14" & 28" New England Road Machinery
15x24 & 10x36 Cedar Rapids Jaw
3—200 HP & 160 HP5D, Ottumwa Elec. Hoists.
17 Speed Reducers 9.37 to 19.5 H.P.
VIBRATING SCREENS
5' x 12—3 Deck A.C. "Rip-It"
4 ELEC. WHIRLEY CRANES
2 Amer. R20-60 Gantry 139' Boom
15 ton AHGD 100' Boom Derrick
R. C. STANHOPE, INC.
60 E. 42nd St., N.Y. 17, N.Y.

LIQUIDATION TITANIUM DIOXIDE PLANT

Broening Highway • Baltimore, Md.

Telephone: MEdford 3-2911

1—Traylor 11' x 155' Rotary Kiln, 2 tires, welded, ¾" shell.

1—Vulcan 8' x 125' Rotary Kiln, 2 tires, ¾" shell.

2—Vulcan 8' x 50' Rotary Kilns, 2 tires, welded, ¾" shell.

2—Vulcan 6' x 60' Rotary Kilns, 2 tires, ¾" shell.

2—Abbe 5' x 16' Ball Mills.

4—Mikro Pulverizers, 3TH, 2TH.

5—Worthington, I.R., Compressors; 1000, 500 & 300 cfm.

2—Aurora 24" Vertical Centrifugal Pumps, 200 HP motors, 5000 gpm, 125' head.

1—Byron Jackson Deep Well Pump, 75 HP Vertical Motor.

8—Dorr Thickener Mechanisms; 50', 40', and 16'.

Steel Buildings; 20 ton Overhead Cranes; Bemis 50 lb. Bag Packer with Sewing Machine; Bucket Elevators 65 to 125 ft. high; Redler Conveyors 5' and 10"; Screw Conveyors 6" and 9", etc.

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SPECIALS

6'-6"x100', 6'x120' & 8'x175' Kilns
10' & 14' Sturtevant Air Separators
12' Raymond Air Separators
#1 & 6 Roll High Side Raymond Mills

CRUSHERS

1—30" x 36", 24" x 36", 18" x 36", 15" x 30", 12" x 24" Jaw Crushers.
2—42" x 16" Allis-Chalmers Crushing Rolls, rebuilt. 36" x 16 rebuilt Sturtevant rolls.
2—24" x 12" Rogers Iron Works Crushing Rolls, Rebuilt.
1—6", 10", 16", 20" McCully Superior Gyratory Crushers.
No. 3 up to No. 12 Gyratory Crushers.

BALL & TUBE MILLS

2—5½'x20', 5'x22', 6'x22', 7'x24' & 7'x35'

DRYERS

8½'x65' & 8'x60

We make new dryers and kilns.

Have you any machinery that you want to sell?

W. P. HEINEKEN, INC.

50 Broad St., N.Y.

Tel. Wh. 4-4336

QUARRY EQUIPMENT

Cedarapids 5A, 3040 Jaw Portable Primary
Cedarapids TW-2B, 1836 Twin Jaw Portable Crushing Plant
Cedarapids 1836 Twin Jaw Crusher.
Cedarapids 1236 Twin Jaw Portable Crushing Plant.
Cedarapids 1236 Twin Jaw Crusher.
Cedarapids 6C, 1236 Twin Jaw Portable Secondary.
Cedarapids 3B, 1036 Jaw Portable Crushing Plant
Cedarapids 1036 Jaw Crusher.
Cedarapids 3033 Hammermill new condition
Cedarapids 3033 Hammermill secondary on rubber.
Cedarapids 3033 Hammermill, Slightly Used.
Tel-smith 36" Gyrophere Crusher.
28" x 84" apron feeder with drive.
Robins 4' x 9' triple deck screen.
Syntron F45 vibrating grizzly feeder.
New Holland 4' x 12' double deck screen.
Pioneer 4' x 8' double deck screen, Rebuilt.
27½ ton, single-compartment 8' x 12' bin.
2—Eagle 36" x 20' Double Log Washers, Good.
Wemco 24" x 18' Sand Preparation Machine.
60-ton, two-compartment, 8' x 18' storage bin with clam gates.
100-ton, two compartment, 13' x 30' bin
Special bins to your specifications.
Conveyors—18"—24"—30"—36". Also conveyor beltting.

SHOVELS AND CRANES

Lorain L-220, 2-yd. Diesel Shovel-Crane.
P & H 855B-LC, 2-yd. diesel dragline.
P & H 655B 1½ yd. diesel dragline reconditioned.
Lorain L-70, 1½ yd. diesel shovel, rebuilt.
Bucyrus-Erie 38B, 1½ yd. Diesel Dragline.
Lorain L-26, ¾ yd. Diesel Dragline, Excellent.
2—Lorain L-28, ¾ yd. Diesel Backhoes.
Lorain L-25A, ¾ yd. Gas Backhoe.
Lorain L-25K, ¾ yd. Gas Crane.
Lima 34 Paymaster ¾-yard diesel shovel, Good
Unit 1020 ¾-yard diesel powered shovel-crane
Unit 614, ½ yd. Diesel Backhoe.
Lorain TL-20, ½ yd. Diesel Backhoe.
Lorain MC-414 30-ton Moto-Crane reconditioned.
Link Belt HC-90 25-ton truck crane
Michigan TLDT-20, 20-ton Truck Crane
Lorain MC-4 15-ton Moto-Crane.
Lorain SP-107, 7-ton self-propelled crane

TRACTORS, TRUCKS, SCRAPERS, ETC.

6—Euclid 18-yd. overhung engine scrapers.
2—Euclid 12-yd. overhung engine scrapers.
3—Euclid 7-yd. overhung engine scraper.
1—Euclid 15½ yd. six wheel scrapers.
2—Euclid 13-yd. bottom dumps, Good.
2—Euclid TC-12 twin engine tractors.
1—Euclid 18FD, 15-ton rear dump.
1—Mack LRS 15-ton rear dump, Rebuilt.
1—Pullman S-600, 6 to 8 yard scraper.
1—Caterpillar DW-10 hydraulic scraper.
1—International TD-14A tractor with PCU
1—International TD 18 with cable bulldozer
1—Euclid tractor with 3200 gallon water tank
1—Cat. D-7 with Hydraulic Angledoser Blade.
1—Cat. D-8 with hydraulic angledoser blade.
1—Caterpillar D-4 Tractor only
1—Internat'l. 300 tractor, with loader backhoe.
1—Allis-Chalmers HD-18 with cable bulldozer
1—LaPlante choate 13½ yd. Cable scraper
1—Atco H85, 10½ yd. Hydraulic scraper
1—Hough Hr. 1-yd. Gas Front End Loader.

SHOVEL ATTACHMENTS

Lorain 82 or 830, 2-yd. 23' boom, 20' stick
Lorain 50, 1-yd., 21' boom, 17' stick
Lorain 30A, ½ yd., 18' boom, 13½' stick.
Osgood 903, 2-yd., 24' boom, 20½' stick.

BACKHOE ATTACHMENTS

Lorain 50 or 40, 16' Boom, 7' Stick, 44' Bucket.
Koehring 304, ¾ yd. 19' boom, 5' stick.

DIESEL POWER UNITS

Cat. D7700, 74 H.P. at 1000 RPM. Rebuilt
Cat. D8800, 88 H.P. at 1000 RPM.
Cat. D13000, 128 H.P. at 1000 RPM. Rebuilt.
QAM 3021C, 3-cylinder, new.
QAM 671, 6-cylinder, rebuilt.
QAM Twin Diesel, rebuilt.

GENERATOR SETS

Universal 5KW, 1200 RPM, D.C. 220-250 Volts.
Century-Waukesha 15 KW, 1200 RPM, 3/60/127-220.
Century-Continental 15KW, 1200 RPM, 3/60/120-208.
Cummins 25KW, 1200 RPM, 3/60/120-208.
Caterpillar 40KW, D318 Engine.
Westinghouse 90KW, 1800 RPM, 3/60/120-208.

AIR COMPRESSORS

105 cu. ft. LeRoi tractor air with dozer, backhoe.
105 cu.ft. Ingersoll Rand Gas Portable.
3—125 cu. ft. Gardner-Denver Gas Portables.
125 cu. ft. Jaeger gas portable.
210 cu. ft. Schramm gas portable.
210 cu. ft. Gardner-Denver Diesel Portable.
215 cu. ft. Schramm gas portable.
500 cu. ft. Ingersoll-Rand, Waukesha power
4—600 cu. ft. Gardner-Denver diesel portables.

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You Save
Up To
50%



CONVEYOR PRICES
INCLUDE BELTING

Complete Pre-Fab sections of 8" Jones & Laughlin Jr. I Beam Frame Conveyors quickly and easily joined together on the job. These beams are rolled with .30% Copper Content. Atmospheric exposure tests disclose that Junior Beams, with .20% Copper have as much as four times the resistance to corrosion as non-copper steels. Braced with structural angle, welded to frame for maximum rigidity. Equipped with 8" roll diameter idlers and return rolls, 20" diameter head pulley and 16" diameter tail pulley, mounted on 2 1/4" or 2 1/2" diameter shaft.

We take our loss on our stock of short length belting. You can save as much as 50% on BONDED CONVEYOR SPECIALS, with conveyor belting in two pieces. Belt is new 4-ply, 28 oz. duck, 1/4" top rubber cover x 3/8" bottom cover. Major grade belt and is Fresh Stock made by leading manufacturers. WRITE FOR BULLETIN #1138.

Bonded troughing idler conveyors also available in Truss Frame Construction. WRITE FOR BULLETIN #1139 AND PRICES.

Belt Width	Length of Conveyor	List Price	Sale Price	Add or Deduct Per Ft.
14"	20'	\$1397	\$ 735	
14"	30'	2222	1159	\$16.94
14"	40'	3377	1748	
16"	20'	1262	667	
16"	30'	2137	1118	
16"	40'	2662	1388	18.94
16"	50'	3712	1930	
18"	20'	1477	797	
18"	30'	2317	1182	
18"	40'	3142	1663	
18"	50'	3697	1952	19.24
18"	60'	4252	2240	
18"	70'	5362	2817	
20"	20'	1517	885	
20"	30'	2382	1248	
20"	40'	3467	1854	20.27
20"	50'	4052	2159	
24"	20'	1590	898	
24"	30'	2430	1334	
24"	40'	3480	1878	
24"	50'	4740	2532	21.78
24"	60'	5580	2967	
24"	70'	6540	3621	
30"	20'	2911	1617	
30"	30'	3871	2112	24.75
30"	40'	4931	2607	
36"	20'	1818	1118	
36"	30'	2858	1677	
36"	40'	3688	2096	27.95
36"	50'	5718	3214	

BONDED® QUALITY BUILT BUCKET ELEVATORS RIGID THROUOUT - MINIMUM VIBRATION AND NOISE



ENCLOSED
ELEVATOR

Open or Enclosed, Vertical or Inclined Bucket Elevators with Continuous or Spaced Buckets mounted on Chain or Belting. Bonded's 19 standard models are designed for low cost, high capacity elevating of practically all bulk materials. Open and other types priced on request. There is a style of bucket for virtually every material or condition: wet or dry, lumpy or fine, granular, slivery, or pellet shapes, hot or chemically active.

Prices listed at right are for Vertical Enclosed Elevators. Standard Elevators with Chain mounted buckets use #477 or #C102B combination chain. 4, 5 and 6 ply, 32 oz. or 35 oz. duck belt is used on Belt mounted Bucket Elevators.

Bonded Bucket Elevators are Jig Built to insure easy Job-Site Installation.

Model No.	Bucket Size Inches	First 20' (Discharge Ht.)	Add or Deduct Per Ft.
Style "A" Spaced Malleable Buckets on Chain			
C53A	5x3 1/2	\$1071.50	\$20.25
C64A	6x4	1088.50	21.00
C85A	8x5	1235.00	25.50
C106A	10x6	1281.00	27.50
C127A	12x7	1510.00	31.25
C148A	14x8	1673.50	36.00
Style "A" Spaced Malleable Buckets on Belt			
B53A	5x3 1/2	\$1099.00	\$20.50
B64A	6x4	1116.50	21.25
B85A	8x5	1311.50	27.25
B106A	10x6	1692.50	33.00
B127A	12x7	1854.50	37.25
Style "E" Continuous Steel Buckets on Chain			
C85E	8x5x 7/8	\$1397.00	\$31.25
C126E	12x6x1 1/2	1599.00	34.25
C108E	10x8x1 1/2	1604.00	34.75
C128E	12x8x1 1/2	1624.00	35.50
C148E	14x8x1 1/2	1710.00	36.75
Style "E" Continuous Steel Buckets on Belt			
B85E	8x5x 7/8	\$1727.50	\$34.50
B116E	11x6x 8/8	1839.50	38.75
B128E	12x8x1 1/2	2013.00	43.50

A complete line of parts and accessories available to build your own Bucket Elevators. Continuous Steel, Salem Steel and Malleable Iron Buckets available in a wide variety of sizes, shapes, gauges and styles at low prices. WRITE FOR BULLETIN #1263 AND PRICES DESCRIBING COMPLETE LINE OF BUCKET ELEVATORS AND BUCKETS.

BONDED® HDF SERIES HEAVY DUTY AND PAN FEEDERS



EF SERIES Capacity to 60 TPH

Bonded EF Series Economy Feeders are ideal for confined spaces and in portable plants. For medium duty service. Available with or without hoppers. Priced From \$224.00

Bonded HDF-18 Heavy Duty Feeders were especially designed for abrasive materials such as Ore, Rock, Crushed Stone, Gravel, Sand, Clinkers, Abrasive Volcanic Ash and Rock. Abrasion Resistant Alloy Steel Plate is used for all parts that contact the material. Capacities to 440 Tons Per Hour.

HDF Series Plate Feeder - Priced From \$925.00

WRITE FOR BULLETIN No. 1311



HDF SERIES

Capacities to 440 Tons Per Hour

BUY WITH CONFIDENCE. References are: Ohio National Bank, Columbus, Ohio, Dun and Bradstreet, and more than 7,000 mines and quarries using Bonded equipment.

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128 Bellevue

Mfrs. of Scales, Conveyors, Conveyor Parts, Idlers, Vibrating Screens, Crushers and Feeders

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NEW CONVEYOR BELTING

SAVE UP TO 34%

WE PAY FREIGHT ON 200 POUNDS OR OVER



QUALITY TESTED CONVEYOR BELTING®

Major Brand: 12# to 15# Average Friction Pull. 800# to 1000# Average Cover Tensile.

Heavy Duty 4-ply, 28-oz. duck, 1/4" top rubber cover x 1/32" bottom rubber cover belting having high tensile strength, tough cotton fabric, strong carcass and proper flexibility. For heavy boxes, bags and bulk materials. Troughs easily. Famous brands at deep cut prices. Fresh stocks.

Width	Ply	List Price	Sale Price
14"	4	\$3.63 ft.	\$2.83 ft.
16"	4	4.08 ft.	2.97 ft.
18"	4	4.51 ft.	3.29 ft.
20"	4	4.97 ft.	3.80 ft.
24"	4	5.85 ft.	4.26 ft.
30"	4	7.18 ft.	5.21 ft.
36"	4	8.51 ft.	6.18 ft.

Major Bee Brand: 16# to 19# Average Friction Pull. 2400# to 3000# Average Cover Tensile. Skin cost between plies.

A high grade of heavy duty 4 and 6-ply, 28 oz. duck, 1/4" top rubber cover x 1/32" bottom rubber cover. These belts are for more severe service, high tonnages and abrasion resistance. For handling stone, mineral ores, concrete, cement, coal, and other similar materials, both wet and dry. Belts have molded rubber edges.

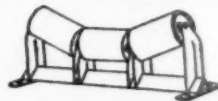
Width	Ply	List Price	Sale Price
14"	4	\$ 4.31 ft.	\$3.06 ft.
16"	4	4.85 ft.	3.46 ft.
18"	4	5.39 ft.	3.83 ft.
20"	4	5.90 ft.	4.37 ft.
24"	4	6.94 ft.	4.94 ft.
30"	4	8.53 ft.	6.07 ft.
36"	4	10.00 ft.	7.35 ft.
24"	5	8.14 ft.	5.78 ft.

*All belting is tested by the Engineering Laboratory of one of the largest universities in the United States. It is guaranteed to meet or exceed listed specifications.

Other widths, plies, duck weights and cover thickness available at low prices

WRITE FOR FREE SAMPLE & BULL. #1234

BONDED® IDLERS AND RETURN ROLLS SAVE 25% AND MORE



3-roll, 5" diameter Troughing Idlers for:	
14" belt	\$19.75
16" belt	20.50
18" belt	21.90
20" belt	22.10
24" belt	22.75

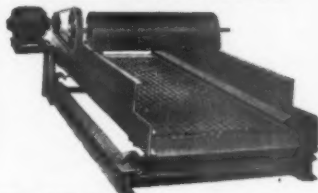
1-roll, 5" diameter Return Idlers for:	
14" belt	\$7.25
16" belt	7.50
18" belt	8.00
20" belt	8.25
24" belt	\$ 8.50
30" belt	9.50
36" belt	10.00
48" belt	11.50

All steel. Interchangeable with other well-known makes. Furnished with replaceable prelubricated sealed ball bearings. Maintenance is negligible. WRITE FOR BULLETIN #1138.

BONDED® VIBRATING SCREENS

PROMPT SHIPMENT OF ALL MODELS

GENERAL DUTY SCREENS

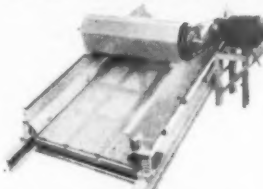


PERFECT BALANCE AND SHARP ACTION. Eccentric weight mechanism, spring mounted. 1 to 3 decks. 2' x 4' to 3' x 8'. WRITE FOR "SEVEN SECRETS OF SUCCESSFUL SCREENING" IN BULLETIN NO. 1086.

For the accurate and economical screening of sand, gravel, crushed stone, ores, broken rock, slag, clay and cement products and lightweight aggregates. All Bonded Screens built of structural steel, welded and reinforced with additional members on all points of strain and factory tested and balanced. Available in enclosed models where dust and flying particles need to be contained. For almost any type of screening operation, wet or dry.

Priced from\$443

SPECIAL SERVICE SCREENS

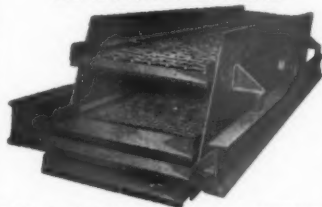


WRITE FOR BULLETIN TYPE C #1224

For scalping middle-range pieces and accurate sizing of fines and above listed products but where quantity and feed do not warrant a larger capacity, heavy duty model. Medium to heavy construction. Can also be suspended from four steel cables and springs for portable or temporary installation. Vibration remains in working screen body. No shaking of tippie, building or platform.

Priced from\$487

HEAVY DUTY SCREENS



FACTORY BALANCED, CONTROLLED VIBRATION. Four bearing positive throw eccentric shaft: 3' x 6' to 5' x 14'. 1 to 5 decks. WRITE FOR BULLETIN NO. 1087 AND 9 REASONS WHY BONDED IS YOUR BEST BUY.

For high tonnages, heavy scalping and multiple sizing of such minerals and industrial products as handled by above models. No dead spots. Springless live-rubber mounting of screen body controls vibration. Screen cloth and plate in all models reversible for longer life. Their finished edges prevent plates from splitting and cloth from raveling.

Priced from\$1620

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8' x 70' Ruggles-Cole Rotary Dryers
8' x 115' Vulcan Rotary Kiln
8' x 50' Vulcan Rotary Kiln
11' x 155' Traylor Rotary Kiln
6' x 50' & 6' x 25' Rotary Dryers
705-24, 502-16 Roto Louvre Dryers

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Jeffrey Hammermills 15"x8" to 36"x24"
Pennsylvania C-3-30 Hammermill 60 HP
Raymond Screen Mills #00, #0000
Raymond #3036 High Side 3 Roll Mill
Raymond #6669 High Side 6 Roll Mill
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Dixie Jr. 2424 Non-Clog Hammermill
Mitts & Merrill Hogs #15CF
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Kennedy 3'6" x 7' Rod Mill
Tube Mill 6'6" x 21"—350 HP Synch.
30" x 14' & 40" x 13' Pug Mills

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18"x16'; 36"x6'; 48"x8' Apron Feeders
24" x 18' Pan Feeder
60' to 90' Centers Bucket Elevators
2000"—16"; 18"; 24" Belt Conveyors
4' x 8' Tyler Hummer Type 38
4' x 6' Tyler Hummer Type 72
15 to 200 ton cap. Steel Bins
10 ton Gas/Elec. Locomotive 36" ga.
25 ton Diesel/Elec. Locomotive 36" ga.

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7400 Marion Diesel Drag, 175', 13 yd.
7400 Marion Elec. Drag, 175', 12 yd.
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200-W Bucyrus Erie Diesel Drag, 125', 6 yd.
5-W Bucyrus Erie Diesel Drag, 100', 6 yd.
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111-M Marion Standard & H.L. Shovels
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- 3—Bradley three roll Pulverizers, 250 HP motors.
- 3—Bucket Elevators 60' centers, 8" x 16" buckets.
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- 2—Herreshoff Furnaces, 20' dia. 16 hearth.
- 1—Herreshoff Furnace, 16' dia. 10 hearth.
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- 6—Bucket Elevators 20 to 65' high.
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- Steel Buildings; Structural Steel; Overhead Cranes; Screw Conveyors; etc.

ILLINOIS

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- 1—Ruggles Cole 5' x 30' Double Shell Rotary Dryer.

OTHER LOCATIONS

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- 1—Allis Chalmers 9' x 130' Rotary Kiln.
- 2—Vulcan 7' x 80' Rotary Dryers.
- 1—6' x 50' Rotary Dryer, ¾" shell.
- 1—5'6" x 50' Rotary Dryer, ¾" shell.
- 1—3' x 30' Rotary Dryer, ¾" shell.
- 3—Link Belt Roto Louvre Dryers; 6'4" x 24', 3'10" x 20', 3'10" x 16'.
- 5—Jaw Crushers 12" x 18" to 36" x 48".
- 2—Gayco 8' dia. Air Separators.
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Including:

Complete 24' x 50' dredge with Amsco 10" pump, CAT® D375 engine, CAT D318 electric set, EAGLE 60' SWINTEK digger and AMERICAN 3 drum hoist.
PIONEER 4' x 12', 3 deck screen with motor.
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Two PIONEER 21 cu. yd. storage bins.
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BARBER-GREENE conveyor—24" x 150', 24" x 45', 18" x 125', 18" x 75', plus others.
A-W 1036 jaw crusher with feeder and motor.
WINSLOW 30 ton, 10' x 40' pit scale.
MICHIGAN 125A Loader.

All of this equipment is in excellent condition, having worked only 4 seasons or less, with complete and careful maintenance. Will sell all or part. Write or call for complete details.

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They're surprisingly **LOW!**

DRYERS; all standard makes; Pittsburgh Lectrodryer, Type BWC, Size 3500 complete. S/S Lined Rotary Dryer 50"x20' with Oil Burner & accessories. Louisville Indirect Fired S/S Lined 30" x 28'. Others.

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Butler Port. Bulk Cement Plant with 70 Yd. Hopper, 250 BBL Elev., Weigh Batchers, Scales, Vibrators, Etc. Cedar Rapids 25 Yd. Secondary Portable Crushing Plant.

Acme Jaw Crusher 9" x 16"
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Asphalt Dryer, 4' x 35', Complete.

Small Dust Elevators for Asphalt Plants, 5" and 6" buckets.

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12" x 24" Ig. Magnetic Belt Separator.
24", 26" & 30" Conveyor Belt, almost new.

1920 Ft. 36" New Belt, Neoprene.
400 Ft. 16" New Belt @ \$2.00 ft.
Conveyor Idlers—All Sizes and Makes.
Steel Grating for Walkways, 95% New.
25, 30, 40 and 50 H.P. Motors.

50 H.P. 100 R.P.M. Gear Motors.
Sturtevant 20 HP Positive Pressure Blower
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New Universal Screens in Stock.

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4' x 12' **IOWA** Horizontal w/motor. 2-deck. Excellent. \$2300.00

4' x 12' **SIMPLICITY**, 2-deck. Model "D". Factory rebuilt. Heavy Duty. \$2100.00.

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4' x 4' section screen sections. Brand new. Half price.

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35-Link Belt 10" **SCREW CONVEYORS** 10½".

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BARGAINS: RR Tank Cars 6514 & 7080 gal. Pioneer 300WA & 125 TPH elec. Washing. CR2036, 2236 Crushing, Noble CA506, Blaw Knox Ready Mix PLANTS, 5" Dredge, 32" FEEDER CONVEYORS 18" to 60" all lengths. DRYERS: 30" x 30.4x20, 4 1/2x35, 6x50, 7x80 KILNS: 8x21x100', 8x124', 8x170' 200 HP 5 drum, 400 HP 4 drum HOISTS CRUSHERS: 8x16, 10x20, 18x36, 20x36, 22x36, 24x36, 28x36, 30x42, 40x42, 36x48 JAW, 9 & 12K Gates, 10, 16, 20 McCully, AC222, 636, & 848R GYR. 25", 36", 48" Telsmith, 2' & 3' Symons CONE, 3018, 4022 & 5424 DBL. ROLL. Lima 44T Truck, Browning WB2 Wagon, 28 ton Clyde Whirley, 28 & 30 ton Bridge CRANES 8' x 48" Hardinge SCRUBBER, Eagle 34" x 25" MILLS: 4 1/2x16", 6x15 Ball, Raymond 66" Roll, 5x22, 6x22 Tube, CR1620 & 4053, Jeffrey 2415 & 4224 Gruender, 3XJ Hammer. SHOVELS: NW25, 6, 80D, Lima 34, 44, 1301, Lorain 50, 820, Koebring 1005, P&H 655A, 1055, 620W, Marion 43M, 111M, 492, Bucyrus 120B, 200W, 9W, Manitowoc 4500

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2 Ft. Standard Symons Cone Crusher.

WOODVILLE LIME
PRODUCTS CO.
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SYMONS CONE CRUSHER
Two foot standard, Serial No. 2410. New 1955—in excellent condition, complete with 30 HP motor, magnetic starter.

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Link Belt Slope Hoist
Size D-20, Herringbone Gear Reducer, Timken Roller Bearings, Drum Size 48" dia. x 48" long, Accommodates 700 ft. of 1 inch Cable. Stockertown, Pa. area.

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Built Especially for High Speed Grab Bucket Operation. Trolley New in 1953 with 2 Eleven Ton Hoists. Lift and Trolley Travel at 234 ft. per minute. 3/60/440 E. C. & M. Magnetic Control. Location Pottstown, Pa. Area.

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PAN CONVEYORS 24" x 18"—
30" x 33" and 36" x 54'
HAMMERMILL 42 x 32 Penna
S-6
GRIZZLY ROLLS Steel frame
contains 6 live rollers 12" dia
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SHOVELS Two Lorain 1 1/4 yd.
Diesel powered.

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2 USED GRAB BUCKETS
Made By Blaw-Knox. Condition Good. One 3 cu. yds.—One 3 1/2 cu. yds. Location Stockertown, Pa. Area.

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